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ABSTRACT

The final report describes the evolution and accomplishments of a project designed to identify factors associated with successful completion of education/training programs for mainstreamed mildly handicapped secondary students. Program outcomes were measured via examination of the student records, interviews, and recollections of special education practitioners. In chapter 1, an overview of the project is presented. A summary of findings revealed that students with less serious handicaps were more likely to complete secondary training than were those with more serious handicaps; the secondary special education program appeared effective in helping the majority of students to function in the regular high school environment, and the effects of program intervention did not seem to be uniform across categories of handicap or for students from different backgrounds. Findings supported the need for data-based decisionmaking. A second chapter describes in detail the research methodology and the final dispositon of the students. Chapter 3 examines three aspect of secondary program operation: level of intervention of program staff in students' academic programs, extent to which a student's history in special education influences the current level of functioning, and the effects of a district's discipline policies on the academic programs of handicapped children. The final chapter offers a causal model of special education services designed to evaluate program operations by examining the interrelationships of program variables. (CL)

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DATA BASED DECISION MAKING IN SECONDARY SPECIAL EDUCATION FINAL REPORT

(PROJECT NUMBER 023JH10005)

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TABLE OF CONTENTS

CHAPTER I: Overview, Findings and Recommendations 4

Introduction 4
Context of the research 5
Pontiac's special education program 7
Design of the research 9
Findings 11
Recommendations 14

CHAPTER II: Background of the Research 16

Introduction 16
Choice of subjects 17
Data collection procedures 19
Description of target population 23
Background characteristics of subjects 27
Measuring the effectiveness of special education 32
Disposition of subjects 35

CHAPTER III: The Impact of Secondary Special Education 39

Introduction 39
Program interventions in secondary special education 40
Total years in special education 52
Program termination and infractions of school rules 62

CHAPTER IV: A Model for the Effectiveness of Special Education 75

Introduction 75
Evaluation and causal modeling 76
Description of the model 77
Description of the variables 81
A model of special education services 86
Conclusion 93
References 94

APPENDICES

A. Data coding sheet
B. Computer programs and data

CHAPTER I

Overview, Findings and Recommendations

Introduction

This is the final report of the Data Based Decision Making in Secondary Special Education Project. This research identified factors which are associated with the successful completion of ecucational and training programs for handicapped secondary students. Existing school records were examined to determine aspects of educational program planning or implementation and features of family background which distinguish those secondary special education students who complete their prescribed educational programs from those who terminate before completion. This chapter will present an overview of the project, describe the major findings and offer recommendations to the special education program.

Context of the research

High rates of program termination are characteristic of handicapped youngsters in secondary special education programs. In many cases, the dropout rates for secondary special education students exceed those for students in regular secondary programs. The relatively large number of secondary special education students who leave school is alarming because many handicapped students are not receiving the skills and training necessary to support an independent adult existence. If we can isolate the factors which cause students to leave school, perhaps special education programs can be modified to counteract the influence of these factors. These programs may become more effective in holding their clients. Likewise, identification of programmatic factors which increase the likelihood that youngsters will remain in secondary special ecucation programs is extremely useful for planning programs for the education of the handicapped.

Special educators are concerned about the effectiveness of the special education program but the individualized nature of the educational plans for handicapped students obscures the examination of the systematic operation of their program. As a result of federal and state legislation and local policy providing for the education of the handicapped, special educators in public schools routinely collect much more detailed information about the students on their caseloads than is required for regular students in the school district. Detailed personal, psychological and educational histories are compiled; certification decisions require consultation among several different professionals; parents are asked to describe the behavior of the youngsters at home; and the child is observed in school settings by special education consultants. These data contain valuable information about the patterns of the effect of program interventions. However, the sheer quantity of information collected and the focus on a particular student mitigate against the use of these data for program planning. Because the unit of information is the individual student, summarizing across students is difficult. Consequently, only a relatively small portion of the available data is ever aggregated.

For program evaluation and planning, the unit of analysis cannot be the individual. It is necessary to aggregate across individual students in order to discover patterns on the performance of groups of special education students. One technique for gathering such aggregate data would be to conduct cross sectional surveys of the special education population served by a particular program. Such data collection enterprises avoid any inherent limitations of program information, such as bias or incompleteness. However, the expense of such data collection is prohibitive. Moreover, longitudinal rather than cross sectional information is needed to measure long term program effect. Therefore, this strategy is not desireable for reasons of both

cost and yield.

A more feasible tactic is to search existing program records for information about the operation of the program. If the procedures for maintaining the individual case files are in general adequate, these files will yield longitudinal information on a student's career at a much lower cost. There are dangers in this approach. Committment to the maintenance of accurate records may vary over time so that information for some periods of a student's career in school may be better than information for others. Moreover, it may be impossible to determine the quality of the information in a student's file: certain data may not appear because they were not relevant or because they were collected and lost subsequently. One goal of the present research is to assess the ability of the special education department's files to support program evaluation. The results presented below indicate that files are a valuable source of data for planners and the payoff to decision makers would be increased by continuing to improve file maintenance procedures.

In order to capture the information contained in existing program records, it is necessary to treat those records in ways which depart from standard department practice. That is, individual student records were examined to determine similarities and not to diagnose uniqueness. In other words, it is not the specific features of a special education student's case which sets him or her apart from regular education students which is of interest. In this research, we are looking for patterns of sameness among certain kinds of handicapped youngsters. We will find that the school careers of handicapped students differ considerably depending upon their handicapping condition.

Pontiac's special education program

The special education program in Pontiac represents the variety of programs and services authorized by county, state and federal regulations. In addition to the state and federal laws governing education for the handicapped, the local special education program is bound by Michigan's Annual Special Education Plan, the Oakland County Intermediate School District Plan, and official memoranda from the Michigan Department of Education. Within constraints established by these various authorities, the special education department serves individuals from birth to age 25, if they have an identified handicap. Handicapping conditions which are eligible for service include educable, trainable and severe mental impairment, emotional and physical or otherwise health impairment, and hearing, vision or speech and language impairment.

Eligibility for service in the special education program is determined by an individualized education program committee (IEPC) which reviews the information on each prospective client. Evaluation by a multidisciplinary team first determines if the student meets the criteria for an identified handicap. If he or she does meet the criteria and is within the age boundaries and has not been graduated from high school, the IEPC will design an educational program to meet the student's needs. After a child has been certified, the IEPC will review his or her eligibility every three years. Any change in the student's program must be reviewed by the committee. Therefore, an IEPC decision is required before a student can be considered terminated from school, decertified from special education or even advanced from junior high to senior high school programs. Only the IEPC has the authority to change the types of special education programs or services for handicapped students. In summary, the IEPC is responsible for the development of an idividual educational plan for each student. This plan includes a statement of the student's present level of educational performance and of goals and instructional objectives, with an appropriate schedule mastery.

A full continuum of programs is available for identified special education students. The IEPC makes the placement which best meets the needs of the handicapped student. This placement may be in the student's regular school or in a segregated setting. Programs for the more mildly handicapped students are located in their home schools but programs for the more severely impaired are located in segregated buildings. For example, the special education department provides a preschool program for identified children between the ages of birth and five years which is located in a separate facility. A junior high school program for severely emotionally impaired students who are unable to function in their regular schools is also housed in a separate location. A complex of three segregated program provide serive for the trainable, severely and multiply impaired. In addition, special segregated

bilingual programs are also provided for students who are unable to function in their home school's special education program with support from the district's bilingual program.

An effort is made to place each stucent in the "least restrictive environment" in which to pursue his or her training. Programs offered in the regular high school are among the "least restrictive" available for secondary special education students. These programs are the focus of this research.

Design of the research

This research investigates the effectiveness of secondary special education programs for enabling their clients to function independently after graduation. From the wide array of programs available for high school aged handicapped individuals, we chose to concentrate on those special education programs which are operated in regular high school buildings. These programs offer the "least restrictive environment" in which to provide special services and clients in these programs are least likely to be prevented from living normal adult lives because of the severity of their handicaps. Our choice of these programs for the more mildly handicapped was dictated by two considerations. On the one hand, if the secondary special education program is not effective for mildly handicapped individuals, it is not likely to be effective for its more severely handicapped clients. On the other hand, treatment interventions which are effective for the mildly handicapped may be modified for use with the severely handicapped. Therefore, we shall evaluate these effectiveness of these least restrictive high school programs.

The target population for this research was drawn from two cohorts of special education students: those who entered the secondary program in the 1978-79 and in the 1979-80 school years. To measure program outcomes fairly it was necessary to examine the careers of students who have been receiving services sufficiently long enough for program interventions to have had a chance to succeed. Handicapped students in these two ninth grade cohorts could have been in the special education program a minimum of three years at the time of this research. If subjects had been chosen from much earlier cohorts, all subjects would have had four years of experience in the program but other problems would have confronted the researcher. The program is likely to have changed considerably in the intervening years and the utility of the findings would have been reduced for making current program decisions. Moreover, access to practitioners whose personal recollections of students in the program were necessary to supplement official records is limited for earlier cohorts.

The performance of students in three categories of handicap in the two selected ninth grade cohorts will be compared. Students who were certified as educable mentally impaired, emotionally impaired or learning disabled are the subjects of this investigation. We focused on these three handicapping conditions because they include the majority of students in the secondary special education program for the cohorts selected. There were too few individuals in other categories of handicap to support an independent analysis and the distinguishing characteristics of the different handicaps were too different to permit grouping students with different kinds of impairment.

Data collection procedures involved a combination of searching official records and interviewing informants in the special education program. Previous research by the principal investigator has shown that school district files are not complete for all students. Therefore, an attempt was made to supplement the information from these files with the personal records and recollections of special education practitioners. These procedures were adequate to yield reliable information on all subjects who were identified but they cannot guarantee that all eligible subjects in the two ninth grade cohorts were identified.

Several measures of program intervention and background characteristics were collected for each subject. First, the current disposition of each subject was obtained so that those who had successfully completed their educational programs could be identified. Second, the number of times a student was found guilty of a serious violation of school rules was used as a measure of his or her ability to function in the regular school environment. Third, the number of self contained special education classes taken by the individual was used as an indicator of the level of direct intervention by the program staff in a student's educational program. Fourth, the number of years an individual received special education services was computed. Finally, a student's sex and race were recorded because of the importance of these variables for considerations of equity. No reliable measure of socioeconomic status or present family stability was available for many of the subjects.

These data were coded onto data sheets by the principal investigator (see Appendix A) and prepared for analysis by computer (see Appendix B).

Findings

In this section, we present a brief overview of the major findings from this research. The arguments and evidence which support these findings are be found in the subsequent chapters of this report.

1. Students with less serious handicaps are more likely to complete their secondary training than those with more serious handicaps.

If completion of the secondary program is the criterion for success in the special education program in the regular high schools in Pontiac, students with learning disabilities are more likely to be successful than their classmates who are educably mentally impaired or emotionally impaired. Over two-thirds (69 per cent) of learning disabled students remain in school until completion of their educational program; only about half of educable mentally impaired (47 per cent) and emotionally imapired (53 per cent) are able to continue in less restrictive special education programs throughout their high school careers. The limitations of a learning disability seem to pose fewer problems in managing an environment of the nonhandicapped. In general, however, the interventions of the secondary special educators seem to be less effective for those students who recuire more intervention.

2. Students with greater needs for special education services receive more direct involvement from the secondary special education program.

Educable mentally impaired and emotionally impaired students are enrolled in more self contained special education classes during their high school careers than are learning disabled students. In as much as special educators have more direct involvement in the educational programs of students in self contained classes, the more seriously disabled stucents experience more direct involvement by program staff. For the years studied, the secondary special ecucation program in Pontiac seems to have provided a level of service commensurate with the level of clients' needs.

3. The longer students remain in the secondary special education program, the less need they have for direct intervention in their educational programs.

On the average, handicapped students take fewer self contained special education classes in their later semesters in

high school than they take initially. To the extent that enrollment in self fewer contained special education classes represents a greater ability to function independently, a student's ability to interact normally with the nonhandicapped increases as he or she matures in the secondary special education program. Further, to the extent that this increased ability to function in regular high school courses indicates ability to function in non school environments, the increased level of "mainstreaming" indicates that the secondary special education program prepares its clients for lives as normal adults.

4. Students who seriously violate school rules experience higher levels of direct involvement by program staff in their educational programs.

Students who are enrolled in more self contained special education courses are more likely to be suspended from high school as result of violating school rules. Enrollment in self contained courses seems to be a measure to prevent a student from encountering problems in the regular high school program and to intervene with students who have already committed a suspendable offense. Intervention by special education staff and formal suspension from the high school program are both responses to the disruptive behavior of students.

5. Experience in the special education program prior to high school has little effect on the level of programs intervention at the secondary level.

Students with more serious handicaps are enrolled in more self contained special education courses in high school, regardless of the number of years they have received special education services. There does not seem to be a cumulative effect of treatment in special education which reduces the need for intervention at the secondary level. Severity of handicap is the factor which determines level of intervention: current capacity and not previos exposure seems to control the extent to which the handicapped students participate with their nonhandicapped classmates in high school.

6. Students who receive special education services for more years are less likely to commit a serious violation of school rules and they are more likely to complete high school training.

Early identification as a special education student enables the individual to receive special education services for a greater number of years. This extended exposure seems to promote better functioning in the regular high school program because those students who are in the program longer are less likely to be

suspended from high school. The longer experience of staff may allow them to prescribe more appropriate educational programs in high school which prevent the handicapped youngster's violating school policy. Moreover, on a more important measure of success, namely, program completion, a longer tenure in the program is related to a higher probability of program completion. The long term effect of total experience in special education programs seems to support the effectiveness of interventions at the high school level which reduce the difficulties a student encounters in the regular high school and which increases his or her chances of completing the secondary program.

7. The secondary special education program seems effective in enabling the majority of its clients to function in the regular high school environment.

If the indicator of adequate functioning is avoiding suspension, the secondary special education program in Pontiac is effective for a majority of its clients. Only a minority of special education students are suspended from high school. Those who are suspended are most likely to have been guilty of truancy and to have been suspended only a single time. However, suspension greatly increases the risks of termination of schooling because those who have been found guilty of an infraction of school rules are much less likely to complete high school.

8. The effects of special education program interventions do not seem to be uniform across categories of handicap or for students from different backgrounds.

Estimates of the effects of special education program interventions were derived by fitting a causal model to the data generated in this research. The model postulated that program intervention variables preceded program outcome variables in the causal order. The analysis of this model is especially useful because it not only provices estimates of the effects of the independent variables on the ultimate dependent variable (program completion) but it also makes explicit the relationships among all prior variables. Our analysis of these causal paths revealed that the effects of self contained special education classes and length of time in special education programs were different for the educable mentally impaired, emotionally impaired and learning disabled students. Further investigation of alternative models can specify the exact nature of the differences in effects.

Recommendations

The findings described above support four recommendations for data based decision making in secondary special education.

1. Special education and school district staff should improve the quality of information maintained as part of student records.

An attempt to use existing special education and school district records to support an evaluation of the secondary special education program in Pontiac found that data were missing on key variables for a number of subjects. To the extent that these data can be used to indicate the level of program performance, their absence limits the information available to program planners. The recent efforts to put program data in machine readable form is a step in the right direction because missing data are much easier to identify in compute files than in hard copy records. However, only the continued insistance of program decision makers on complete information on clients can guarantee acequate program records.

2. The special education program should reduce the disparities in outcome and performance among students with different handicaps.

Our analysis revealed that more seriously handicapped students do not fare as well in the secondary special education program as the less seriously impaired. We found that the effects of total time in special education programs and the level of direct staff intervention in an individual stucent's educational program are not uniform across categories of handicap. Although the more seriously handicapped present greater challenges to program staff, the rights of these individuals to an educational opportunity equal to the less severely and nonhandicapped students are not diminished. Continuing review of the interventions available for the more seriously handicapped in the regular high schools can improve the services to these individuals and guarantee them their rights to equal educational opportunity.

3. The special education program should improve interventions available for handicapped students who violate school rules.

This research indicated that the more seriously handicapped students are more likely to be suspended during their high school careers and that those who are suspended are much less

likely to complete their individual educational programs. We realize that students who are more seriously handicapped may experience more problems functioning in a regular high school environment and that these problems manifest themselves in higher risks of violation of school rules. However, the majority of suspensions are for relatively minor offenses, usually nonattendance. The cost to the student's academic career is the same for major and minor offenses. Therefore, program staff should consider additional strategies for those suspended which will increase the chances that these students will complete their training.

4. Special education program decisions should be routinely based upon data gathered about program operation.

The investigation conducted here has indicated that available programm data can support an evaluation of the effectiveness of secondary special education programs. Information which is becoming more routinely available in Pontiac can be analyzed in ways which enable decision makers to examine the direct contributions of program interventions to the success of individual clients. We recommend caution against a too simple view of these data, however, because of the tendency we observed for suppression of effects in a causal model of special education services. Therefore, we encourage program planners to consider their data in the context of an analysis which is sensitive to the subtleties of program delivery.

CHAPTER II

Background of the Research

Introduction

This chapter describes the background of the research. A rationale for the selection of the subjects is presented and the procedures for collecting information on them are outlined. The distributions of handicapping conditions and of selected background characteristics among the target population are displayed. In addition, we discuss the criterion to be applied in measuring the effectiveness of secondary special education programs. Finally, we present the dispositions of the handicapped students studied here.

Choice of subjects

This research focuses on the effectiveness of secondary special education programs. For our purposes, only those secondary special education programs which are offered in the Pontiac School District's two regular high schools will be considered. The programs in the regular high school buildings are not the only ones offered by the local special education department for adolescent and young adult clients. However, these are the least restrictive programs available for identified special education students: they are housed in a regular high school building, their clients are integrated with the regular education student population and clients in these programs may be "mainstreamed" in regular education classes. These programs permit the highest level of interaction between handicapped and nonhandicapped students. Therefore, these programs provide a laboratory to examine how well special education program interventions prepare clients for lives as normal adults. Because these high school programs begin in the ninth grade, the target population for this research will include students who began receiving services from the secondary special education program as ninth graders.

As we shall describe below, our measure of effectiveness is the rate of success of secondary special ecucation students. In order to estimate rate of success, it was necessary to select sufficient numbers of subjects to characterize program operations. Because there may be idiosyncratic features of the students in a particular year and because there are too few students in a single year of Pontiac's program to support the proposed analyses, all the students who began receiving special education services as ninth graders in each of two years were included as subjects in this research. The selection of two ninth grade cohorts will allow us to investigate the outcomes of program interventions among two separate groups of students and will, thereby, reduce the bias introduced because of the particular characteristics of the students in any given year. If such differences in program operations and outcomes do appear between the subjects in the two cohorts, their influence can be controlled in the analyses.

The choice of the specific ninth grade cohorts to be studied was determined by two considerations. First, a more recent cohort was desireable because it was more likely that informants had had direct contact with the subjects and because their recollections of the participants would be more recent. Access to informants was necessary as a check on the materials contained in the student records and as a supplement to the official record. Someone familiar with the actual circumstances of an individual's case can resolve disparities that may be found in the written records. Previous investigations of the local official special education records have indicated that such disparities are likely to occur.

Second, if the ninth grade cohorts chosen were too recent, the effectiveness of the special education program would not receive a fair test. There is some minimum amount of program exposure which is necessary before we can reasonably expect a result from the interventions: educational treatments are not magical. Moreover, subjects are more likely to be at risk of termination later in their educational careers than earlier. For example, program termination is more likely in later grades than in earlier grades both because of greater number of outside-of-school alternatives that are available to older students and because of the lower tolerance of school officials for disruptive behavior by students who have passed the age of compulsory attendance. Therefore, a choice of ninth grade cohorts which resulted in one group being significantly younger than the other would artifically bias any estimate of the effectiveness of the program.

These considerations, then, dictated a choice of ninth grade cohorts which were sufficiently recent for special education practitioners to remember the participants but sufficiently in the past to allow subjects to have experienced program interventions. The cohorts which began ninth grade for the first time in the 1978-79 and the 1979-80 school years met these criteria. During the time of the research, students in the earlier cohort would be completing their junior years. At a minimum, the special education program would have had three years during which to intervene in the educational programs of the subjects in the 1979-80 ninth grade cohort. Moreover, all subjects in both cohorts would have passed the age of sixteen at the time of this research so that school officials would have had the opportunity to remove those who were, in their view, too disruptive for continuation in the regular high school program. These students, then, were the subjects in this research.

Data collection procedures

The initial phase of data collection for this research was the identification of the special education program participants who entered ninth grade in the 1978-79 and 1979-80 school years. Lists of these participants were not available from secondary special education personnel. Special education staff prepares a list for each school year of all the participants receiving special education services. This record of participants is periodically changed to reflect the current status of the students. If a student drops or is added to the program, a new list of participants is prepared: since all changes are recorded as transactions in the student record system, a former student who reenters the program is treated as a new student. Only the records of special education department reflect the history of that student. However, these lists are not routinely maintained after the current program year. Therefore, it was necessary to find an alternate source for a listing of program participants for the ninth grade cohorts in question. Access to the personal records and memories of special education staff was essential for the completion of this project.

The district's data processing department lists for all students enrolled as of the official state counting date, the Fourth Friday of each school year were the starting points for data gathering. District archives contained the lists for the 1978-79 and 1979-80 school years. For the 1979-80 school year, special education students were assigned to a grade level. Consequently, it was possible to identify those students who entered special education programs in the district's high schools in the 1979-80 school year directly from the official Fourth Friday list. In the preceding year, special education students were listed as "ungraded." Therefore, although the lists showed which students were identified as special education students, they did not indicate which students were entering the program that year. For members of the 1978-79 cohort, it was necessary to have special education department staff review the official list. An informant was able to specify the students on the "ungraded" list who had entered the secondary program in that year. She had also kept copies of her personal records for the years in question and was able to icentify additional subjects who had entered the program after the official Fourth Friday count. By these means, lists of the subjects in the two ninth grade cohorts were created.

Next, the current student record system was interrogated to determine the status of the special education students in these two ninth grade cohorts. The student identification numbers contained on the original data processing lists facilitated entry in the computerized file where the student information is stored. For those students whose records were still resident on the system, their age, sex and race were collected. Information on students whose records were not available in the computerized file

was collected during one of the subsequent phases described below.

We note that when this research began, the district had just converted to a new student record system. Because the conversion was recent, there had not been sufficient time for all the relevant data to have been entered into the new system. Therefore, the dispositions of most subjects of this research were not available from the computer record. This information was collected from an informant in the special education department. During the course of the research the information on the computer files was updated substantially. Recent review of these files revealed that most records contained complete information.

In order to determine the level of performance of the subjects, the school performance record of each subject was examined. In cooperation with secondary special education staff, the permanent record of each subject was reviewed. The number and type of courses which each student had taken during his or her high school career were recorded, as well as the number of credits he or she had accumulated. This process also provided a check on the information collected during the previous phases of data gathering. For example, students who had been coded as terminated in the computer record were found to be still in attendance; students who were listed as in attendance in the computer file had subsequently left the program.

The disparities observed in the lists available from the student record files and from program staff indicate the difficulties of using official records in investigations of this type. The needs for official student record information differ considerably from the needs of providers of service to the handicapped. For example, the history of a client's performance which practitioners need to plan appropriate educational interventions is much more detailed than the information needed to produce accurate counts of current enrollments. An evaluator must be alert to these differences because they have an impact on the information which is available for the analysis. Specifically in the case of this research, the procedures described here were adequate to guarantee that the educational outcomes of identified special education students were correctly categorized: there were at least three separate examinations of the records of the students identified as members of the 1978-79 and 1979-80 ninth grade cohorts. However, these procedures cannot ensure that all potential subjects were identified. An investigation of the records of all secondary students in attendance during the two years in question would have been necessary to rule out the possibility that there were names missing from the working lists. Such an investigation was beyond the resources of this project. Frequent discussions with program practitioners did reduce the probability that large numbers of potential subjects were ignored but the kind of information required to conduct this investigation is not routinely maintained by the school district or special

education department staff.

There is evidence that the utility of the formal records for use in program evaluation may be increasing. At the time of this research, the computer files were merely acjuncts to the hard copy records maintained by the special education department. Because the utility of these computer files had not been established, many staff members viewed these records as an unnecessary redundancy. The effort needed to create and to maintain such a file is wasted to the extent that the information it contains is neither accurate nor up-to-date. The more recent efforts expended tc increase the utility of the computer records have resulted in major improvements in the quality and quantity of data contained in these files.

Finally, the folcers which are maintainec by the special education department on program participants were reviewed. These folders contain copies of all official transactions involving the students in the sepcial education program. Records of initial assessments, family histories and the periodic reviews of student progress are kept in these folcers. These folders yielded time of entry into the special education program and the family status of the subjects of the research. Although these folders constitute the official special education department's records on the participating students, not every folder contained all the required information. The records of active students were more likely to be complete than the records of stucents who had left the program but all information was not available for all active students. These omissions are notable in the case of marital status of the parents of certified youngsters described below. The vast number of paper recorcs which must be maintained makes a certain amount of missing data inevitable: it is very difficult to mcnitor the concition of all these hard copy records. However, these folders oo constitute the official record of program participants and are legally required to contain a complete complement of data cn each student in the special education program. For a considerable number of subjects in this research this was not the case.

The attempt tc collect the data for this research illustrates the difficulties of evaluating special programs using available information and the need for revised record keeping procedures to support data based decision making for program planning. Three different official sources of information, the computerized student record system, the school performance record, and the special education department's student folcers, were consulted and information was obtained from an informant in the special education department. These procedures were still inadequate to collect complete information on every subject. Few decision makers can afford the resources and time to conduct such investigations. There is a clear need to streamline record keeping and cata retreival so that program planners can have

better access to timely data for the evaluation of their programs.

In summary, a combination of official records and personal recollections was the source of data on secondary special education students in the 1978-79 and 1979-80 ninth grade cohorts. The data collection procedures were sufficient to produce reliable information on the history and school performance of the subjects who had been identified as members of the two ninth grade cohorts. No adequate checks, however, were available to ensure that the membership lists in these cohorts were complete. The possibility of the exclusion of subjects may contribute to anamolies in the data discussed later in this report.

Description of target population

The rationale and procedures described in the preceding sections of this report served to identify the subjects for this research. Because the difficulties presented by each handicapping condition are different, it is necessary to analyze the outcomes of the special education interventions for subjects in each category of handicap separately.

Our focus in this research will be limited to students in three categories of handicap: educable mentally impaired (EMI), emotionally impaired (EI), and learning disabled (LD). These are not the only categories of handicap served by Pontiac's special education program. Special programs are provided for the trainable mentally impaired, the severely mentally impaired and the severely multiply impaired but these programs are not housed in the regular high school buildings. Moreover, services are available for the hearing and visually impaired, and the physical or otherwise health impaired. However, there are relatively few students with these impairments and they generally are more easily integrated into the regular high school program. Educable mentally impaired, emotionally impaired and learning disabled students are more likely to experience problems when they confront the regular high school program and they constitute the majority of students receiving service from the secondary special education programs in the regular high schools.

A comprehensive evaluation by a multidisciplinary team that includes a psychologist must certify that an individual displays four behavioral characteristics before he or she qualifies for special education services as educable mentally impaired. First, the student's intellectual ability must be at least two standard deviations below normal. Second, his or her level of academic achievement must be in the lowest six percentiles on a standardized achievement test. Third, the student's lack of development must be primarily cognitive. Finally, he or she must have demonstrated an inability to behave appropriately in the school setting.

Emotional impairment must be certified by a psychologist and a social worker, as well as educational specialists. This handicap involves characteristics which adversely affect the student's learning, such as an inability to build or to maintain satisfactory interpersonal relationships with teachers or peers and inappropriate feelings or behavior under normal circumstances. In general, the inability of an emotionally impaired student to learn cannot be explained by intellectual, sensory or health factors.

A psychologist and a student's regular teacher may

diagnose the presence of a learning disability. Such a disgnosis indicates that the child has a disorder in one or more of the basic psychological processes involved in the understancing or use of language, either written or spoken. This disorder does not include problems which result from physical or emotional handicaps or from economic or cultural differences. The learning disability is manifested by a large discrepancy between the student's estimated ability to learn and his or her present level of academic achievement.

These three handicapping conditions are the most frequently encountered in secondary special education programs in Pontiac. Therefore, information will be presented separately for educable mentally impaired, emotionally impaired and learning disabled subjects.

Table 2.1 displays the distributions of handicapping conditions of the 218 special education students in the two ninth grade cohorts selected. We note that 25 per cent more subjects were identified in the 1979-80 cohort than in the 1978-79 school year (122 versus 96). There are several possible explanations for this difference. For example, more students may have qualified for services in the later year than in the earlier year. However, enrollments in the district declined between these two years and the trend in special education department policy was toward decertification of more clients. Both these factors should have decreased the number of identified special education students in the later ninth grade cohort. Therefore, we cannot rule out the possibility that a number of ninth graders who were receiving special education services in 1978-79 were excluded.

Among the total group of subjects for this research, slightly more than half (51 per cent) have identified learning disabilities. Almost a fourth of the subjects were diagnosed educable mentally impaired (23 per cent) or emotionally impaired (22 per cent). Only a very few subjects (3 per cent) had a primary diagnosis of physically or otherwise health impaired.

No significant differences in the distribution of handicapping conditions appear between the two cohorts. However, there were slightly more students identified as educable mentally impaired in the 1978-79 cohort than in the 1979-80 cohort (27 per cent versus 20 per cent) and slightly fewer students were identified as emotionally impaired (17 per cent versus 25 per cent). There is no evidence of a systematic change in procedures for differential diagnosis which would account for a shift in the relative proportion of educable mentally impaired and emotionally impaired in the two cohorts. That is, there is no reason for us to believe that students who would have been certified as educable mentally impaired in one cohort would have been certified as emotionally impaired in the other. There is, in addition, no

evidence that emotionally impaired students in the 1978-79 cohort were at greater risk of program termination than those in the 1979-80 cohort. If the emotionally impaired were more likely not to remain in the school in the 1978-79 cohort and if these terminations were likely to occur early in their careers, these students may be the ones who are missing from the 1978-79 cohort. If a particular building policy resulted in the suspension and subsequent termination of emotionally impaired students during 1978-79 and these students were forgotten by program staff because of the elapsed time since their departures, it would provide a possible explanation for the greater number of emotionally impaired in the 1979-80 cohort. A similar situation in reverse would have to be postulated for the greater incidence of educable mental impairment in the 1978-79 cohort. However, we have no evidence of such processes having occurred. In any case, the differences between the distributions in the two cohorts are not substantial.

The analyses reported in later sections will deal only with educable mentally impaired, emotionally impaired and learning disabled students; there are too few physically and otherwise health impaired students to support an independent analysis. In addition, cohort will be used as a control variable in all analyses to counteract the potential bias introduced by the possible exclusion of subjects in the 1978-79 cohort.

TABLE 2.1

Handicapping conditions of identified subjects by cohort
(In percentages)

	1978-79	1979-80	Total
EMI	27%	20%	23%
EI	17	25	22
LD	51	52	51
POHI	5	2	3
Missing	--	1	1
Total Per Cent	100%	100%	100%
(Number)	(96)	(122)	(218)

Background characteristics of the subjects

Special education programs serve students with identified handicaps. With very few exceptions, the incidence of these handicapping conditions is unrelated to the background characteristics of the clients. Therefore, we do not expect to find systematic differences between regular and special education student populations. If such differences are found, they may indicate that students are being certified into special education programs for reasons other than their handicap. In this section, we will describe the background characteristics of the secondary special education students in the 1978-79 and 1979-80 ninth grade cohorts.

Race. Table 2.2.A displays the racial backgrounds of subjects in each ninth grade cohort. Blacks are more likely to be identified as educable mentally impaired and as learning disabled than whites in both groups. Blacks are about as likely as whites to be identified as emotionally impaired in the two groups studied. The pattern of ethnic distribution within handicapping conditions appears to be consistent across the ninth grade cohorts.

We note that the ratio of blacks to whites in special education programs is higher than the ratio of blacks to whites in the total student population in Pontiac Schools. Among all Pontiac students, the black to white ratio is about 1:1, whereas among the learning disabled the ratio is about 3:2 and twice as many blacks are certified as educable mentally impaired as whites. These seems to be an overrepresentation of black children in both ninth grade cohorts. However, we further note that relatively few Hispanics, native Americans and Asians (coded as "Other" in Table 2.4.A) were identified as special education students and this proportion corresponds to the proportion of students in these ethnic groups in the school district.

The data available to this research are not sufficient to demonstrate a clear pattern of racial bias in the delivery of special education services in Pontiac. An overrepresentation of blacks should be found in an examination of more than just two cohorts. Moreover, identifying a pattern does not explain the reasons for the appearance of bias. But, the racial distributions presented are consistent with racial bias.

Sex. Males are much more likely to be certified as emotionally impaired or learning disabled than females in both ninth grade cohorts (see Table 2.2.B). Educable mentally impaired students are about equally likely to be males or females. Again there seems to be a consistent pattern in the sex distributions of subjects in the two ninth grade cohorts. This pattern is also

consistent with an explanation of biased selection. Are males more likely to be certified into special education because they are more disruptive in the regular classroom? Does the overrepresentation of males indicate that the local special education program has been coopted into serving as an adjunct to the district's discipline policies? Although we do not have sufficient data to address the question of bias directly in this research, it is a continuing concern for special educators.

Age. No differences in mean chronological age appears among subjects with different handicapping conditions within the two ninth grade cohorts. (See Table 2.2.C.) The subjects in the 1978-79 cohort are on the average about a year older than the subjects in the 1979-80 cohort. Within each cohort, there are only negligible differences in the mean chronological ages of subjects in each category of handicap. The relatively small variances among the subjects within each handicap group indicate that subjects are homogeneous with respect to age.

Family Stability. Finally, where available, we collected information on the marital status of a subject's parents. These data provide a rough measure of family stability. It is particularly necessary to attempt to measure family stability because of the importance attached to the situation in a client's home by local educators. School people believe that they have more problems with children from disrupted families because the parents in these families provide less support for their child's educational career. There is a tacit acceptance of lower expectations for students from unstable homes. A first step in the investigation of the basis for this belief is the determination of the relationship between family stability and student outcome. The demonstration of this relationship is not sufficient to justify the received wisdom of practitioners: the relationship may be a result of a self-fulfilling prophesy. However, a relationship between outcome and home environment is reason to continue the investigation of the importance of family stability for the effectiveness of special education programs.

Table 2.2.D presents the distributions of the marital status of the parents of the subjects in each of the ninth grade cohorts. In all categories of handicap in both cohorts, with the exception of the parents of the emotionally impaired subjects in 1979-80, parents are more likely to be separated or divorced than married. The emotionally impaired in 1979-80 and the educable mentally impaired in 1978-79 are much more likely to have come from homes where at least one parent is deceased or the mother is single and never married. This accounts for the larger percentages of "other" statuses for these two subgroups. We note that this pattern of family stability is consistent with the distribution among the general population of students in the school district.

The marital status data address the relationship between a disrupted home life and performance in the special education program. However, there are limitations with these data. One problem is that the marital status information was not available for all subjects: the marital status of parents was unable to be determined for over one quarter of the subjects. Family history data were more likely to be missing for subjects who had been in the program either a very long or a very short time. Procedures to obtain complete records may not have been as actively enforced in the earlier periods of the special education program or the information was collected and subsequently lost. Current procedures seem more effective but still require a minimum amount of time to implement. Due to the relatively large number of cases for which these data are missing, separate analyses will be conducted for the family stability variable so that the number of cases available for analysis will not be unduly compromised.

Another limitation is that the marital status data reflect the family situation at the time when the student was initially certified as eligible to receive special education services. They do not reflect changes which have occurred since that time. Consequently, these data do not reflect any subsequent disruptions in the family which may affect the youngster's performance in the program.

A final limitation of the use of marital status as an index of family stability derives from the wide diversity of interpersonal relationships possible in families. Divorce or separation represent only one extreme solution to family problems. Other solutions may have equal or greater consequences upon children. Because parents remain married, it cannot be unambiguously inferred that the home situation of a child is ideal.

Information of four background characteristics was reported in this section. These data represent only a sample of a wide array of variables may increase our understanding of the performance of special education students. Why were these variables and not others included? First, ethnicity and gender are important in all considerations of equality of educational opportunity; marital status is one indicator, usually recorded, which is a surrogate for the influence of the subject's family. These variables can be used to detect bias in the delivery of special education services. Second, there is no reason to believe that there is significant variation among the subjects within each handicapping condition in level of intellectual capacity. The certification process guarantees a degree of homogeneity among the clients within each category of handicap on those variables which are used to determine the presence of a handicap. Finally, these variables are ones which are often used by practitioners to explain outcomes in special education. Therefore, these background characteristics have manifest credibility to program planners and

practitioners.

TABLE 2.2

Selected demographic characteristics of secondary special education students by handicapping condition and cohort

	1978-79			1979-80		
	EMI	EI	LD	EMI	EI	LD
A. Race						
White	36%	53%	38%	29%	43%	36%
Black	64	47	58	71	57	57
Other	--	--	4	--	--	7
Total	100%	100%	100%	100%	100%	100%
(Number)	(25)	(15)	(48)	(24)	(30)	(61)
B. Sex						
Male	52%	80%	75%	46%	65%	70%
Female	48	20	25	54	36	30
Total	100%	100%	100%	100%	101%	100%
(Number)	(25)	(15)	(48)	(24)	(31)	(63)
C. Chronologcal Age						
Mean	19.0	18.9	19.0	18.2	17.8	17.9
S.D.	.7	.8	.7	.6	.7	.6
(Number)	(25)	(14)	(47)	(24)	(31)	(64)
D. Family Stability						
Married	27%	33%	33%	36%	35%	39%
Divorced	40	58	52	57	27	51
Other	33	8	15	7	38	10
Total	100%	99%	100%	100%	100%	100%
(Number)	(15)	(12)	(27)	(14)	(26)	(49)

Measuring effectiveness of special education

Special education programs are designed to reduce or remove the limitations which handicapping conditions impose upon individual learning. If these programs are effective, special education students will receive the same benefits from their education as regular education students. In later life, the life chances of a handicapped student will not be adversely affected by his or her handicap. The ultimate measure of the effectiveness of any educational program, including those for the handicapped, is the ability of the students to function independently after graduation.

Evaluations of educational programs attempt to determine the extent to which school programs achieve their intended results. Measures of achievement in educational programs, either regular or special, cannot rely on such ultimate tests as performance in adult roles. There is too long a delay between the application of the educational treatment and the eventual outcome to permit any ascription of cause. The ability to lead a productive adult life involves many more factors than educational training. Even if the collection of outcome data could wait until the subject had achieved adult status, a direct connection between the achievement of that status and the educational program could not be established. However, program planners require timely information which indicates whether the training which they are providing is meeting the needs of their clients. Therefore, educational program evaluations are based upon shorter term measures of program outcomes. For this research, the shorter term measure of the effectiveness of special education programs is the rate of completion of prescribed high school courses demonstrated by the program's clients.

It is important to clarify the limits of our argument that the completion rate of special education students is a valid indicator of the effectiveness of education programs. We assume that handicapped youngsters are more likely to remain in effective secondary special education programs and, conversely, that rate of termination of students before completion is an indicator of the level of ineffectiveness of a secondary special education program. We do not maintain that a student who remains in an ineffective program (i.e., one characterized by a high rate of termination) may not experience personal success. Nor do we claim that students who terminate their involvement in an effective program (i.e., one characterized by a low rate of termination) cannot thrive in a nonschool environment. These judgments can only be made by considering the circumstances in each individual case. Moreover, we understand that success in adult roles involves more than educational background and that a full determination of the effectiveness of a special education program must include more than a count of the number of its clients who remain in school. But, we argue that the retention of its clients is a minimum

requirement for the effectiveness of a special education program. If clients who do not complete the program have the same chances to function as independent adults as those who remain in the program, the training provided is unnecessary. We assume that those clients who complete special education programs have greater chances of success in their adult roles than those who leave the program before completion.

Current dispositions were able to be determined for 97 per cent (n=218) of the identified subjects of the research. These dispositions were grouped into six categories. The most desireable outcomes included completion of the formal requirements of Pontiac's special education program (graduation), continued attendance in Pontiac's program, and transfer to an equivalent educational program in another district or in another state. These three outcomes are most clearly consistent with our assumption about the value of completing schooling.

Two other possible dispositions less clearly represent success in the terms of this research. First, special education students may not be able to manage in the relatively less restrictive environment of a regular high school. It may be necessary for these students to transfer to a more restrictive educational or training facility. In one sense, this kind of outcome does not represent an instance of failure for the special education program because the client continues to receive needed services: these services are provided in a different setting or by a different agency. But, to the extent that the program itself was unable to provide the structure which the client needed, the program can be judged at least partially inadequate. Second, this group includes dispositions which represent the client's premature choice of a full adult status (employment, marriage, beginning a family). To the extent that a special education program prepares clients for success in these adult roles before formal completion of the required training, the program is unnecessary and inefficient. To the extent that failure to complete the required training limits the client's subsequent options in the adult role, the program has not met its client's needs by not maintaining the client in the program.

The final group of dispositions includes all those subjects who simply terminate their participation in the program before completion with no alternate plan. These cases represent the clearest examples of program failure because the clients are forced to rely on their own resources to function independently as adults.

These six dispositions represent a range of possible outcomes for special education students. For our purposes, we judge that effective programs will produce higher proportions of outcomes which reflect more training for clients. In the next

section, we will examine the level of effectiveness of the secondary special education programs in Pontiac Schools.

Disposition of subjects

Table 2.2 presents the distributions of these six dispositions for each ninth grade cohort. We note that higher proportions of clients graduated in the 1978-79 cohort than in the later year. This difference is, of course, an artifact of the grade levels of the students in the two cohorts: in 1981-82, students in the earlier cohort were seniors in high school while those in the earlier cohort were completing their third year. Comparison between subjects in these two cohorts will be easier if we consider continued attendance and graduation as indicators of a single variable: graduation is a logical extension of continued attendance since a student must remain in attendance in order to graduate.

Considering the combined program retention measure, learning disabled students have the highest percentages of continued attenders in both cohorts (50 per cent in 1978-79 and 61 per cent in 1979-80); two of every five emotionally impaired students continue in Pontiac's special education program (40 per cent in 1978-79 and 43 per cent in 1979-80); educable mentally impaired students are least likely to remain in the secondary special education program (38 per cent in 1978-79 and 29 per cent in 1979-80). These data indicate that the secondary special education programs offered in regular Pontiac high schools seem to be more effective for students with learning disabilities than for those with other categories of handicap. Because the special education programs under investigation are operated in the relatively unrestrictive environment of a regular high school building, it is perhaps predictable that these programs would be most effective for the least seriously impaired.

A clearer indication of the greater level of effectiveness of the program for learning disabled students can be seen by inspecting the percentage of students with each handicapping condition who terminate the program before completion. In both cohorts, learning disabled students have the smallest percentages of program termination (33 per cent in 1978-79 and 21 per cent in 1979-80). However, these is not a consistent pattern between educable mentally impaired and emotionally impaired in the two cohorts. A higher percentage of educable mentally impaired students (54 per cent) than emotionally impaired students (40 per cent) leave the program in the 1979-80 cohort; in 1978-79, educable impaired students (53 per cent) are more likely to be leavers than the emotionally mentally impaired (38 per cent). Two factors may account for this difference between the cohorts. First, the number of subjects in the emotionally impaired category in 1978-79 is only half the number in that category in 1979-80. We speculated above about the possibility of a systematic exclusion of subjects in the earlier cohort. If there was an exclusion of students in the earlier cohort, it would be unlikely that only emotionally impaired

clients were affected. Yet we cannot rule out that possibility. For whatever reasons, because of the smaller number in 1978-79, the addition of a relatively few emotionally impaired students could significantly alter the pattern displayed here.

Second, substantially more educable mentally impaired students transferred to other educational programs in 1978-79 than did in 1979-80 (21 per cent versus 8 per cent). We cannot be certain of the eventual outcomes of these transfers: we do not know how many subjects completed programs into which they transferred. The termination of a relatively few transfers would produce a distribution more similar to the one shown by the clients in 1979-80. Moreover, we do not know what proportion of the leavers in 1979-80 may reenter other programs in the coming year. A decision to return to school by a few of those who have terminated in the 1979-80 cohort would improve the success rate of the emotionally mentally impaired for this group. Nevertheless, at the end of the 1981-82 school year, considerably more educable mentally impaired students had opted to terminate their educational careers in the 1979-80 ninth grade cohort than in the preceding year.

Further light can be shed upon this process by an examination of when in the student's career are terminations are likely to occur. The proportion of students in each handicapping category in each ninth grade cohort who terminated in each semester of their high school careers was computed. Termination rates in each semseter between individuals with the same handicapping condition in the different ninth grade cohorts can be directly compared for the first five semesters. The cumulative density functions for students with each handicapping condition in both cohorts are compared in Figure 2.1. These displays indicate that the pattern of terminations among educable mentally impaired and learning disabled students in 1978-79 and 1979-80 are essentially the same. The termination rates of the emotionally impaired students show a different pattern in each cohort: in 1978-79 much lower rates of termination characterize the early semesters than in the 1979-80 ninth grade cohort. With only two years of data it is impossible to determine if the patterns displayed in this chart reflect stable program trends or idiosyncratic disturbances. Plotting data from additional years would reveal the stability of these patterns. Because these additional data were not available, we can only note the disparity between the termination rates of the emotionally impaired and other clients of the program.

Two general conclusions seem to follow from the data on the dispositions of individuals with different handicapping conditions. First, learning disabled students consistently fare better than their more seriously impaired classmates. Since the special education programs under consideration here are operated in regular school district high schools, this result is not

surprising. The constraints imposed by his or her handicap on a learning disabled child may be more easily addressed in a regular education setting than those imposed on students whose handicap includes an emotional component. For example, a learning disabled student may be able to function adequately within a regular education classroom with only a minimum of external support. This support often takes the form of remedial instruction. Students with a more serious impairment may find the constraints of regular educational settings beyond their control. To meet the needs of these students a special education program may be required to provide remedial instruction in a more structured setting. The very structure of a regular high school building may limit the effectiveness of any alternate settings in that atmosphere. Under these conditions, reasonable expectations for success may need to be lowered for the more severely disabled students. The importance of the handicapping condition on final disposition, however, dictates that any analysis of factors which influence outcomes must take handicapping conditions into account.

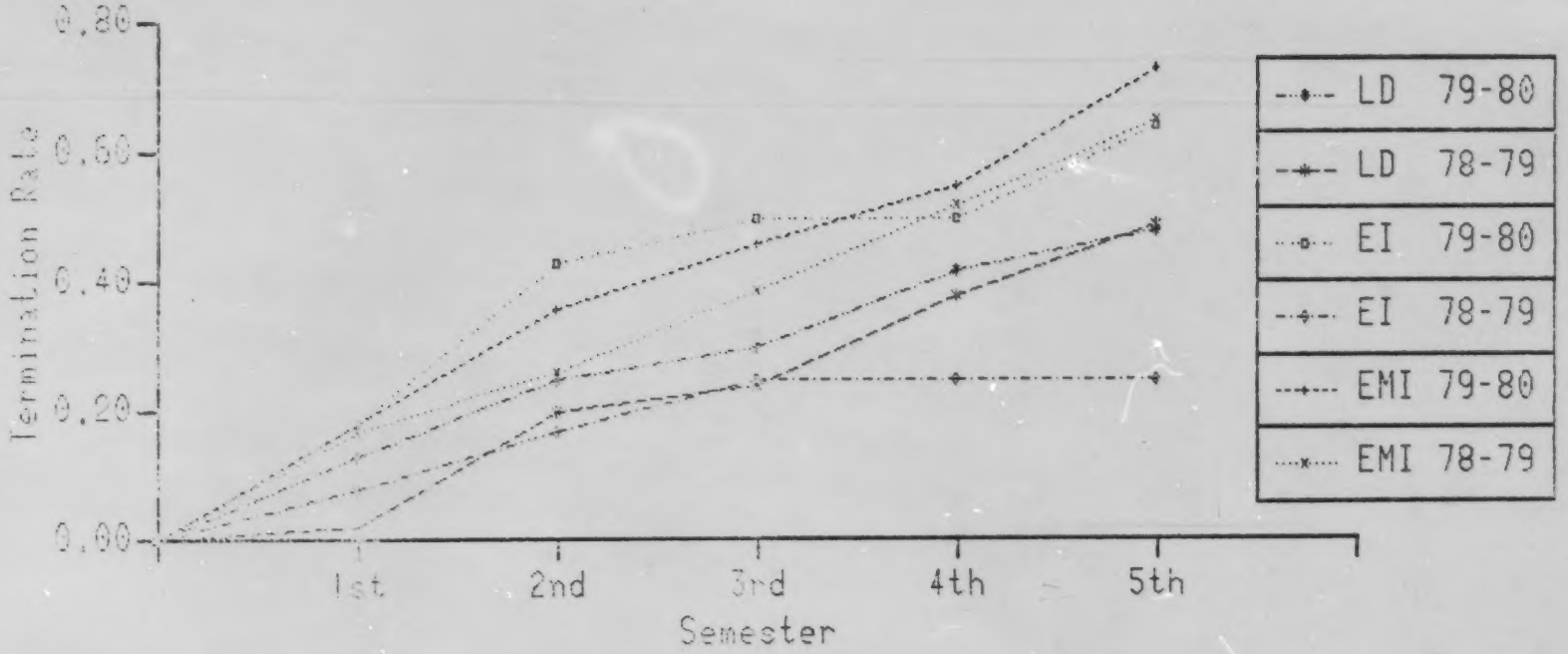
Second, these data show systematic differences between the two cohorts. Although we are unable to account for these differences in terms of the information which is available to this research, we cannot ignore them. Therefore, in all subsequent analyses, cohort will be entered as a control variable.

TABLE 2.3

Dispositions of secondary special education students by handicapping condition and cohort

	1978-79				1979-80			
	EMI	EI	LD	POHI	EMI	EI	LD	POHI
Attend	21%	20%	15%	--%	29%	43%	59%	50%
Graduate	17	20	35	60	--	--	2	--
Other ed'l	21	--	10	00	8	17	11	50
Other	4	7	--	20	4	--	8	--
Adult	--	--	6	--	4	--	--	--
Terminate	38	53	33	20	54	40	21	--
Total	101%	100%	99%	100%	99%	100%	101%	100%
(Number)	(24)	(15)	(48)	(5)	(24)	(30)	(63)	(2)

Fig 2.1
Cumulative termination rates
by semester



CHAPTER III

The Impact of Secondary Special Education

Introduction

Handicapped students have equal rights to appropriate educational programs regardless of their handicap. Secondary special education programs provide services to high school students so that they can complete their secondary training. The procedures outlined in Chapter II of this report produced information on the various aspects of the performance of handicapped students in Pontiac's secondary special education program. In this chapter we will examine three aspects of the operation of programs for handicapped high school students in more detail. First, we shall explore the effectiveness of the level of intervention by program staff in a student's academic program. Second, we shall investigate the extent to which a student's entire history in the special education program influences his or her current level of functioning. Finally, we shall examine the effects of the school district's discipline policies on the academic programs of handicapped children.

Program interventions in secondary special education

The major component of special education services is the design of educational programs which are appropriate for the particular needs of handicapped students. These individualized educational programs vary in the degree of integration of the special education student into the nonhandicapped student population. The degree of integration is controlled by the number of regular education classes which the handicapped student is allowed to take. Our focus here is on programs offered in the regular high school buildings so we will not consider programs for students who are unable to function at all in the regular high school.

There are basically two kinds of courses available to special education students in programs in the regular high school: they may be scheduled into self contained special education courses or, with varying degrees of support from special education staff, they may take regular high school courses. In the special education courses, class sizes are smaller and the specialized training of the teacher enables him or her to be better able to help the handicapped youngster with problems of learning. In the regular education courses, the special education student is integrated into a classroom of nonhandicapped students where he or she is expected to perform like his or her classmates.

The enrollment of special ecucation stucents in regular education courses has been referred to as "mainstreaming." Allowing the handicappec youngsters tc mix on an equal footing with nonhandicapped youngsters is thought to better prepare special education students to function independently after graduation. Their experience dealing on a daily basis with adults and children whc are not handicapped is good practice for life as a normal adult. The legislation requiring the placement of special educatien students in "the least restrictive environment" follows this rationale.

The instructional program in the regular high schools in Pontiac has been cut back to a five hour day as a result of the financial difficulties in the district over the past several years. Recurrent fiscal shortfalls have severely limited the possibility of reinstating sixth hour classes and extracurricular activities. Therefore, a student may enroll in five courses in each of his or her semesters in high school. A special education student in these regular high schools may be scheduled into as many as five special education courses in any given semester. An index of the level of support a student is receiving in the special education program is the number of special education courses he or she takes each semester. A student who is better able to function in a regular classroom setting will be assigned to fewer special education courses.

Although scheduling decisions reflect the individual characteristics of particular students, the pattern of course selection can be seen in the number of special education courses which students in different handicapping categories take. In order to examine the level of intervention by the special education department in a student's academic program, the average number of special education courses taken by special education students during each semester of their high school careers was computed for each handicapping category in both ninth grade cohorts. The total number of special education courses taken by a handicapped student was divided by the number of semesters he or she was in the secondary special education program. Table 3.1.A presents these data.

Educable mentally impaired students in both ninth grade cohorts are most likely to take special education courses (an average of 3.3 courses per semester in 1978-79 and 4.0 per semester in 1979-80). On the average, about half the courses taken by the emotionally impaired and the learning disabled students are offered by the special education program (2.6 and 2.9, respectively, in 1978-79 and 2.4 and 2.5, respectively, in 1979-80). For the members of the two ninth grade cohorts studied, there is a consistent pattern: educable mentally impaired students are likely to require more intervention by the special education program than their emotionally impaired and learning disabled classmates.

The results of an analysis of variance reported in Table 3.1.B show that there is a reliable difference between the average number of special education courses taken by students with different handicapping conditions. The educable mentally impaired youngsters in 1979-80 seem to require higher levels of support compared to other handicapped students in that cohort than the educable mentally impaired in 1978-79 (the interaction term is statistically significant). But the tendency of the educable mentally impaired to take fewer regular education courses is clear (the main effect for handicapping condition is statistically significant).

The pattern revealed by these data seems to indicate that the special education program interventions are tailored to the needs of its clients. Special education students seem to be placed in less restrictive environments wherever possible. There is no evidence of a systematic attempt to segregate special educatiomn students because we find differences between the level of intervention in the educational programs of students in the different handicapping conditions. Students with more serious handicaps receive more special education program support than those with less serious handicaps. The finding here is consistent with an explanation of special education course enrollment which depends upon the capacities of the handicapped youngsters to function in less restrictive environments.

In the school arena, regular education classes are more like the situation which a handicapped student will confront in normal adult life than are special education classes. Does the special education program in Pontiac prepare its clients to lead normal lives after graduation by increasing their opportunities to interact with the nonhandicapped? Is the focus of training to reduce the needs of the clients for restricted environments? We can address this issue by examining the average number of special education courses taken in each semester of high school.

Figure 3.1 displays the mean number of special education courses taken by students with each handicapping condition in each of their high school semesters. (See also Table 3.2.) There seems to be a general tendency for special education students to take fewer special education courses in the later semesters of their high school careers. For emotionally impaired and learning disabled students in both ninth grade cohorts, the later semesters in high school show a decline in the number of special education courses from the peak reached in sophomore year (semesters 3 and 4). The educable mentally impaired in the earlier cohort follow a similar pattern of decrease in the number of special education courses taken but students with this handicapping condition in the 1979-80 cohort continue taking a high number of the more restrictive classes through their junior year in high school. On the average, however, the special education program does seem to enable its clients to enter progressively less restrictive learning environments. How much less restrictive those environments become seems to depend somewhat on the handicapping condition: educable mentally impaired clients on the average are assigned to more special education classes than their classmates in each semester. But even for the educable mentally impaired, at least in the 1978-79 cohort, they are more likely to find themselves in less restrictive classrooms in their later years than in their beginning semesters in high school.

Before we can accept the interpretation that the progress of a student in special education is toward less restrictive classroom environments, we must explore another possibility. It could be argued that those students who cannot function in a regular education classroom and who require self contained special education classes in order to continue their training are the ones who have the most difficulty in any program in the regular high school setting. These students are sorted out in the early semesters of high school and those who are unable to function leave the program. According to this view, the reason for the decrease in the number of special education courses in later semesters is that those who require major interventions by special education staff have left the program by their junior year. The fact that those who remain are enrolled in fewer special education courses is not indicative of the effectiveness of the program in decreasing its clients' needs for restrictive learning environments but of the operation of a selection process which removes difficult subjects.

Apparent support for this negative view can be found in the steady decline in the number of survivors in the program through successive semesters in high school. We have seen elsewhere that substantial proportions of the subjects do not complete their training. The attrition of clients can also be seen in the declining numbers which constitute the bases for the percentages in Table 3.2. There are also similarities in the patterns of suspensions and the numbers of special education courses: both seem to decline in later semesters. What is the proper interpretation of this evidence? Do clients who remain in Pontiac's special education program become progressively more able to function independently? Or does the Pontiac program systematically exclude those who cannot function in a regular building setting?

In our attempt to decide this issue, we first note that there is only a small relationship between the number of special education courses and completion of education program among students in each category of handicap: the zero order correlation coefficients for educable mentally impaired ($r=.18$ in 1978-79 and $r=.17$ in 1979-80) and learning disabled ($r=.03$ in 1978-79 and $r=-.04$ in 1979-80) are essentially zero; there is a slight negative relationship between program completion and level of program intervention among the emotionally impaired but the correlations are not significantly different from zero in either cohort (in 1978-79, $r=-.49$, $t=-1.76$ on $df=10$; in 1979-80, $r=-.12$, $t=-.59$ on $df=26$). (Note that program completion is a dummy variable which has a value of "1" for students who continue in any regular high school program and a "0" for those who leave such programs for any reason.) If the special education program were systematically excluding difficult students (those who required consistently more intervention by the special education staff), we would expect to find stronger negative relationships between rate of success in the program and number of special education courses taken. Our failure to find these negative relationships does not prove that the special education program moves its clients toward progressively less restrictive environments but it does not lend support to a process of systematic exclusion of difficult students.

A more direct measure of the effectiveness of interventions by the special education program is the eventual result of the interventions for the handicapped student. The goal of special educators should be to enable each of their clients to complete their educational programs, regardless of their educational program or their individual handicap. The special education program should be flexible enough to respond with interventions appropriate for the particular needs of each individual client; the appropriateness of the interventions should be reflected in higher rates of success in the educational programs.

Evidence that the program is functioning in this manner is difficult to collect. Judgments of appropriateness are made periodically on an individual basis and individual educational programs are changed on the basis of these judgments. We cannot adequately summarize all the possible patterns of program intervention. But we can reassure ourselves by failing to find a systematic difference in outcomes within by different subgroups in the client population. If no systematic differences are found, we have no reason to suspect that the quality of service differs for students with different handicapping conditions.

An analysis of covariance of the effects of handicapping condition and cohort with the number of special education courses taken each semester as covariate fails to reveal a significant effect for level of program intervention on program completion. (See Table 3.3.) Those who receive more direct service from the special education program are not more likely to be successful in their educational programs. The level of program intervention does not significantly increase the chances of success of clients in the program.

Another measure of success in an individualized educational program is the number of high school credits a student accumulates. Table 3.4 shows that there is no systematic relationship between the number of special education courses and the number of credits accumulated. Differences between students with different handicapping conditions and between students in the two ninth grade cohorts are not affected by the level of intervention by the special education program.

A direct test of the effectiveness of special education program interventions for disruptive students can be found in the relationship between the number of special education courses and the number of times a student was disciplined for a violation of school rules. More serious violations result in formal suspension from school: the number of suspensions is an indicator of the level of disruption a student causes. (Suspensions will be discussed more fully in a later section of this chapter.) The number of special ecucation courses represents the level of program intervention with individual clients: more special education courses implies greater intervention in a student's academic program. Are interventions increased in response to a student's difficulty in the regular education program, that is, does the program respond to suspensions by increasing the number of special education courses? Or, are students who need higher levels of program intervention more likely to be suspended? We shall return to these questions after a discussion of the relationship between the level of program intervention and violations of school rules.

For most secondary special education students in both

cohorts, there is only a slight relationship between number of special education courses and number of suspensions. The correlations between suspensions and level of program intervention is essentially zero for the emotionally impaired (r=.32 in 1978-79; r=.15 in 1979-80) and for the learning disabled (r=.18 in 1978-79; r=.11 in 1979-80). Among educable mentally impaired students, however, the relationship is quite strong in 1978-79 (r=.52, t=2.79 on df=21). For the more seriously handicapped in this cohort, there seems to be an association between the incidence of disruptive behavior and the level of program intervention.

An analysis of covariance which tests the effect of program interventions among clients with different handicapping conditions in the two ninth grade cohorts is presented in Table 3.5.A. Only the covariate, the mean number of special education courses, explains a significant portion of the variance in the number of suspensions; these is no significant difference in the level of disruption caused by students with different handicaps or in the different ninth grade cohorts when the level of program intervention is controlled. We can see the effects of program intervention in the adjusted means in Table 3.5.B. The level of program intervention reduces the relative rate of suspension among the educable mentally impaired (.69 to .56) and increases the rate among the emotionally impaired (.68 to .76). Controlling the level of program intervention reveals that emotionally impaired students are most likely to be suspended. The number of special education courses has little or no effect upon the mean number of suspensions among the learning disabled or among subjects in the two ninth grade cohorts.

The results of this analysis indicate that the level of intervention by special education program staff has more impact for students with more serious handicaps. Special education courses seem to reduce the risk of suspension among the educable mentally impaired. But for the emotionally impaired, more self contained courses is associated with more suspensions from school. However, we caution against an overinterpretation of these data since so small a proportion of the total variance is explained by the analysis (R **2= .06).

Special education staff prescribe the level of intervention into a student's educational program in response to his or her observed need. The likelihood is that more seriously handicapped clients will require higher levels of initial and continuing intervention. For these students, it seems that the need for special program intervention declines through their high school career and limits the risk of school rule violation. However, program interventions can be increased in response to a student's manifest difficulty in managing in the regular school environment. When a student's behavior becomes disruptive, his or her special education classes can be increased. In this sense,

program intervention is both a preventive and a treatment measure for student disruption. On the one hand, courses designed specifically for handicapped students can prevent violations of school rules before they occur by limiting the interaction between the handicapped child and the regular education program. On the other hand, for a student in trouble in school, these courses represent a protected environment where the risks of further violations are reduced. Assignment to more special education courses is as much a response to a student's disruptive behavior as is his or her suspension. A suspension is a device used by the regular school program to reduce disruption in the educational program; special education interventions not only seek to reduce disruption but also to maintain the student in school. The high termination rates for special education students indicate that the interventions are not as effective as they could be.

In summary, we have seen that the level of intervention by the special education program varies somewhat with the severity of a student's handicap. Students with more serious handicaps have more direct involvement with special education practitioners by virtue of being assigned to more self-contained special education classes during their high school careers. The students with greater needs receive more service. However, we have also observed a tendency for direct involvement with special education program staff to decline the longer the client is in school. The program does seem to promote independent adult functioning in as much as the handicapped students spend an increasing proportion of their class time in regular education courses. Finally, the program interventions seem to be used both as treatment for and prevention against violations of school rules and do not seem to operate systematically to harm clients.

TABLE 3.1

A. Mean number of special education courses by handicapping condition and cohort

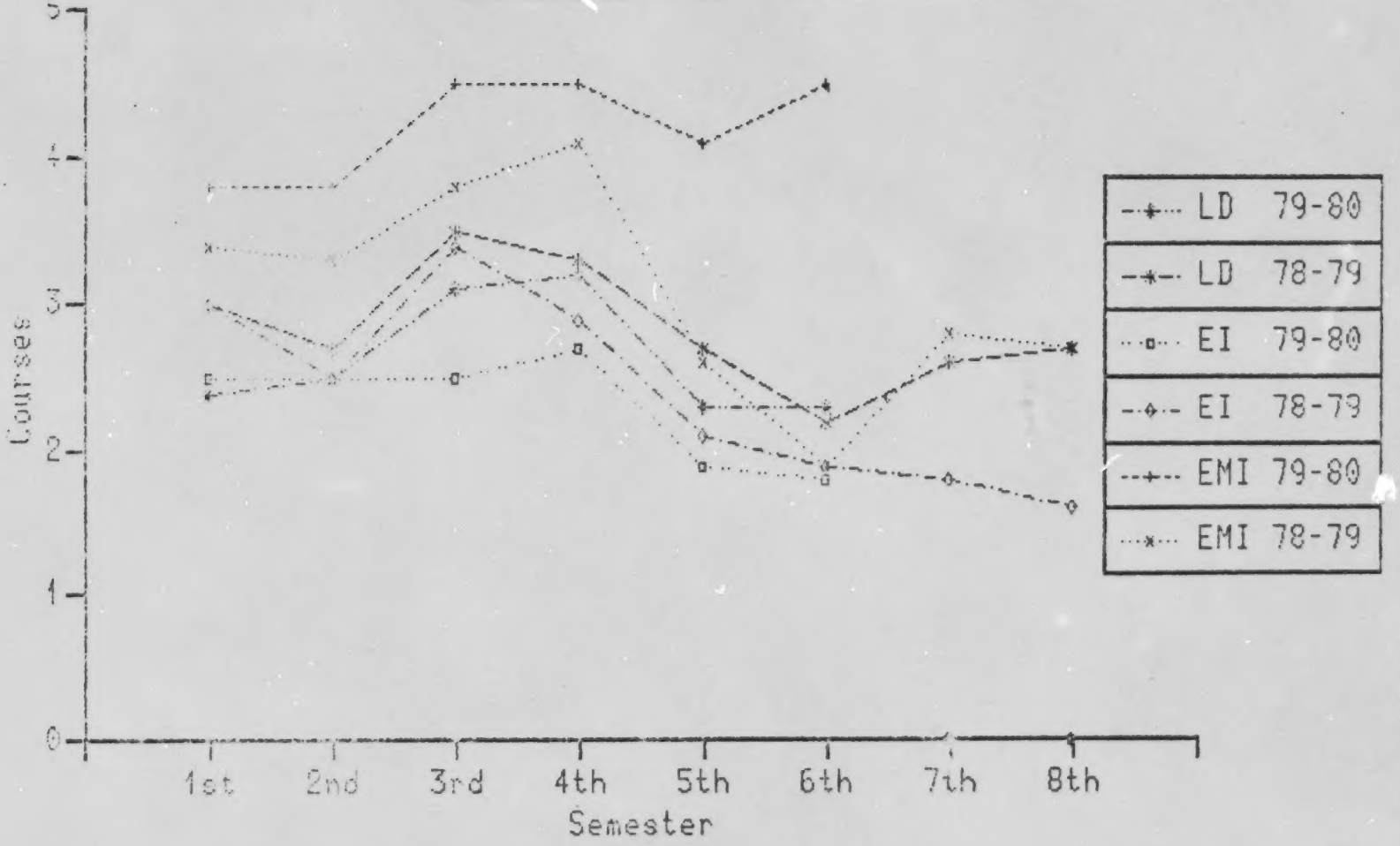
	1978-79			1979-80		
	EMI	EI	LD	EMI	EI	LD
Mean	3.3	2.6	2.9	4.0	2.4	2.6
S.D.	.7	.9	.9	.5	1.3	1.2
(Number)	(23)	(12)	(45)	(22)	(28)	(60)

B. Analysis of variance

Source	SS	DF	MS	F
Handicap	37.70	2	18.85	18.48 ***
Cohort	.06	1	0.00	0.00
Handicap x cohort	9.84		4.92	4.82 **
Error	187.98	184	1.02	
Total	235.58	189		

** Significant at .01
*** Significant at .001

Fig 3.1
Mean special education courses
by semester



PAGE 47A

51

TABLE 3.2

Mean number of special education courses by semester by handicapping condition and cohort (Number in parentheses)

	1978-79			1979-80		
Semester	EMI	EI	LD	EMI	EI	LD
1	3.4 (20)	3.0 (11)	3.0 (43)	3.8 (20)	2.5 (33)	2.4 (52)
2	3.3 (18)	2.5 (11)	2.7 (40)	3.8 (18)	2.5 (24)	2.5 (52)
3	3.8 (16)	3.4 (11)	3.5 (35)	4.5 (15)	2.5 (17)	3.1 (44)
4	4.1 (14)	2.9 (9)	3.3 (32)	4.5 (13)	2.7 (15)	3.2 (40)
5	2.6 (11)	2.1 (9)	2.7 (29)	4.1 (10)	1.9 (14)	2.3 (38)
6	1.9 (9)	1.9 (7)	2.2 (25)	4.5 (6)	1.8 (10)	2.3 (36)
7	2.8 (8)	1.8 (6)	2.6 (21)	--	--	--
8	2.7 (7)	1.6 (5)	2.7 (17)	--	--	--

TABLE 3.3

Analysis of covariance of program completion by handicapping condition and cohort with mean number of special education courses

Source	SS	DF	MS	F
Special eduation courses	.61	1	.61	2.65
Handicap	1.32	2	.66	2.87
Cohort	.10	1	.10	.43
Handicap x Cohort	1.04	2	.52	2.26
Error	41.27	182	.23	
Total	44.34	188	.25	

TABLE 3.4

A. Analysis of covariance of number of high school credits by handicapping condition and cohort with number of special education courses

Source	SS	DF	MS	F
Special education courses	20.34	1	20.34	.56
Handicap	208.88	2	104.44	2.86
Cohort	116.63	1	116.63	3.20
Handicap x Cohort	29.79	2	14.90	.41
Error	6601.60	181	36.47	
Total	6977.24	189		

B. Unadjusted and adjusted mean number of suspensions by handicapping condition and cohort

	Unadjusted	Adjusted*	(n)
Handicap			
EMI	7.58	7.52	(45)
EI	8.11	8.25	(39)
LD	10.02	9.99	(104)
Cohort			
1978-79	9.94	9.96	(80)
1979-80	8.38	8.36	(108)

*Means acjusted for covariate anc independents.

TABLE 3.5

A. Analysis of covariance of number of suspensions by handicapping condition and cohort with number of special education courses

Source	SS	DF	MS	F
Special education courses	5.09	1	5.09	7.71 **
Handicap	2.11	2	1.06	1.61
Cohort	0.86	1	.86	1.30
Handicap x Cohort	3.18	2	1.59	2.41
Error	119.85	183	.66	
Total	131.09	189		

** Significant at .01

B. Unadjusted and adjusted mean number of suspensions by handicapping condition and cohort

	Unadjusted	Adjusted*	(n)
Handicap			
EMI	.69	.56	(45)
EI	.68	.76	(40)
LD	.46	.49	(105)
Cohort			
1978-79	.64	.64	(80)
1979-80	.50	.50	(110)

*Means acjusted for covariate and independents.

Total years in special education

The total number of years a handicapped student receives special education services is a factor in explaining the effectiveness of secondary special education programs. It is reasonable to expect that students who have been receiving special education services for more years will benefit more than those who have only been in the program a few years. There may not have been sufficient time for the special education program to have made a difference for those students who have only received services for a brief period. In this section, we shall examine the relationship between the number of years a student participates in the special education program and the effectiveness of program interventions.

How long a student receives special education services depends upon how early in his or her school career he or she is identified as eligible for treatment. For some students, identification occurs in the earliest years; for others, special education services do not begin until their school years are almost completed. Among the subjects of this research, total years in the special education program ranged from less than one to fifteen years, with a median of 6.75 years. Eight years was the mode of the distribution.

Students in each category of handicap received service for about the same number of years. Table 3.6.A shows that educable mentally impaired students in both ninth grade cohorts have been in the special education program for slightly longer than their classmates with other handicapping conditions. In the 1978-79 cohort, the educable mentally impaired have been receiving service from the special education program for 7.35 years, as compared to 6.46 years for emotionally impaired and 6.49 years for the learning disabled; in the 1979-80 cohort, the educable mentally impaired have been identified as special education students for 6.78 years, as compared to 5.96 years for the emotionally impaired and 6.37 years for students with learning disabilities. However, these differences in numbers of years served are not statistically significant (see Table 3.6.B). Students in the earlier cohort have been receiving service longer than those in the later cohort but there is enough variation in the number of years for which students have been certified as eligible to receive special education services to reduce the year advantage of subjects in the 1978-79 cohort.

We note that students in the earlier cohort do demonstrate significantly more time in the secondary special education program. (See Table 3.7.) But, even though there is a significant cohort effect for time in secondary programs, there are no reliable differences among handicapping conditions. Therefore, both in terms of total experience in special education

and in terms of the number of semesters in the programs in the high schools, we do not find any systematic differences in the years for during which services were received between students with different handicapping conditions.

We shall first examine the relationship between the number of years a student has received special education services and his or her ability to function in the regular high school instructional program. Does a student who receives special education services for a longer period of time develop a greater capacity for normal interactions with the nonhandicapped individuals? Length of time can be examined with respect to our two measures of successful functioning in the environment of the regular high school: the level of interventions by the program in the student's ecucational program and his or her rate of violation of school rules.

First, one indication of a student's ability to function in a normal (that is, less restrictive) environment is the number of special education courses in his or her high school schedule. We saw in a previous section that students with more serious handicaps take more of their courses in self contained special education classes than students with less serious handicaps. Does length of time in program reduce the need for special classes of students in different categories of handicap? Table 3.8 shows that when years in special education is used as a covariate the relationship between handicapping condition and average number of special education courses taken each semester is unchanged. The number of years a student receives special education services does not seem to have a significant effect on the level of intervention in the student's academic program.

These data indicate that experience in the special education program prior to high school has little to do with the student's ability to participate more with his or her nonhandicapped classmates. A longer exposure before entering high school does not seem to better prepare the special education students for more sustained contact with the regular student population. There does not seem to be a cumulative effect of special education services. The ability to function in regular high school classes depends upon the current behavior of the special education student. At least in terms of participation in self contained special education classes, previous treatment does not seem to influence current behavior.

Second, the number of violations of school rules is another indicator of the ability to function in a normal school environment. If special education programs are effective, we would expect that students who receive services longer would experience fewer problems. Their exposure to the special education program for a number of years would better prepare them to handle

the constraints imposed by the regular school environment. Indeed, we find that for selected subgroups there is a significant association between time in the special education program and appropriate school behavior. For the educable mentally impaired ($r=-.47$, $t=-2.44$ on $df=21$) and for the learning disabled ($r=-.34$, $t=-2.14$ on $df=35$) in the 1978-79 cohort and for the emotionally impaired in the 1979-80 cohort ($r=-.45$, $t=-2.57$ on $df=26$), the longer subjects are in the program, the less likely they are to violate school rules. However, no significant relationship is found among subjects in the other groups. Consequently, there does not seem to be a consistent pattern of effect among the students with different handicapping conditions. In general, though, where there is an effect, those students who have been in the program longer are less likely to be suspended from high school.

The value of receiving special education services for longer periods of time can more easily be seen when the rate of school violations within each subgroup is adjusted for the total years in the special ecucation program. An analysis of covariance shows that the number of years in special education programs explains a significant proportion of the variance in rate of suspensions ($R **2=.109$). (See Table 3.9.) When the effects of time in special education are controlled, no significant differences are observed among students with different handicapping conditions or between stucents in the two ninth grade cohorts. Overall, subjects in each category of handicap seem to benefit from longer periods of special education service.

A more direct measure of the value of extended exposure to special education services is the outcome of the student's educational program. Although it is useful to know that more years of service do not decrease the client's need for self contained classes but do decrease the incidence of suspension, the ultimate test of the effectiveness of special education services is the completion of educational programs. Are students who receive services for longer periods of time more likely to be successful in school than those who are in the special education for briefer periods of time?

There is a significant relationship between years in special education and program completion among students in each handicapping category in the 1979-80 cohort: educable mentally impaired ($r=.59$, $t=3.35$ on $df=21$), emotionally impaired ($r=.44$, $t=2.64$ on $df=26$) and learning disabled ($r=.33$, $t=2.64$ on $df=57$). A significant zero order correlation is only found for the learning disabled in 1978-79 ($r=.37$, $t=2.36$ on $df=35$); for the educable mentally impaired and the emotionally impaired students in the earlier cohort, there is no significant association between length of exposure and success in the program. Considering only the zero order relationships, length of time in special education seems more important in the 1979-80 cohort than in the 1978-79

cohort.

An analysis of covariance shows that both number of years in the special education program and handicapping condition have a significant effect on program completion. (See Table 3.10.) Those students who have been exposed to special education services longer are more likely to complete their educational programs. But, controlling for number of years in the program, we still find a significant difference in the completion rate of students with different handicapping conditions. Students with less serious handicaps are more likely to finish their schooling than those with more serious handicaps (see Table 3.10.B).

This analysis indicates that a longer exposure to special education services is beneficial to secondary special education students. However, more time in the program does not seem to compensate for the greater difficulties which students with more serious handicapping conditions experience in school. Earlier identification of the more seriously handicapped students does not seem to make their chances of success equal to the chances of the less serious handicapped or nonhandicapped students.

A corollary analysis which yields the same result is presented in Table 3.11. Total years in special education and handicapping condition show a significant effect upon the number of high school credits a student accumulates. Receiving service for longer periods of time pays off for clients in more credits but the payoff seems to be higher for the less seriously handicapped students.

In summary, early identification as a special education student means that the handicapped individual will receive special education services for a longer period of time. On the average, the more seriously handicapped students tend to have been in the special education program slightly longer than students with less serious handicaps. But the greater length of time in the program does not seem to equalize program impact among students in the different categories of handicap. On most program outcome measures, less seriously handicapped students fare better than their more seriously handicapped classmates.

TABLE 3.6

A. Mean number of years in special education by handicapping condition and cohort

	1978-79			1979-80		
	EMI	EI	LD	EMI	EI	LD
Mean	7.35	6.46	6.49	6.78	5.96	6.37
S.D.	3.16	3.36	2.43	3.41	2.99	2.98
(Number)	(23)	(13)	(37)	(23)	(28)	(59)

B. Analysis of variance

Source	SS	DF	MS	F
Handicap	18.43	2	9.22	1.03
Cohort	4.23	1	4.23	.47
Handicap x Cohort	1.94	2	.97	.11
Error	1580.35	177	8.93	
Total	1604.95	182		

TABLE 3.7

A. Mean number of semesters in secondary special education by handicapping condition and cohort

	1978-79			1979-80		
	EMI	EI	LD	EMI	EI	LD
Mean	4.61	5.92	5.44	3.73	3.75	4.42
S.D.	2.66	2.50	2.40	1.96	2.08	1.93
(Number)	(23)	(12)	(45)	(22)	(28)	(60)

B. Analysis of variance

Source	SS	DF	MS	F	
Handicap	19.19	2	9.59	1.97	
Cohort	65.58	1	65.58	13.47	***
Handicap x Cohort	9.75	2	4.88	1.07	
Error	895.69	184	4.87		
Total	990.21	189			

*** Significant at .001

TABLE 3.8

A. Analysis of covariance of special education courses by handicapping condition and cohort with years in special education program

Source	SS	DF	MS	F
Years in special education	.89	1	.89	.85
Handicap	32.75	2	16.38	15.75 ***
Cohort	.00	1	.00	.00
Handicap x Cohort	8.61	2	4.31	4.15 *
Error	171.21	165	1.04	
Total	213.46	171	1.25	

* Significant at .05
*** Significant at .001

B. Unadjusted and adjusted mean number of special education courses by handicapping condition and cohort

	Unadjusted	Adjusted*	(n)
Handicap			
EMI	3.67	3.67	(43)
EI	2.52	2.52	(36)
LD	2.71	2.71	(93)
Cohort			
1978-79	3.00	2.91	(68)
1979-80	2.85	2.91	(104)

* Means adjustec for covariate and independents.

TABLE 3.9

A. Analysis of covariance of number of suspensions by handicapping condition and cohort with years in special education

Source	SS	DF	MS	F
Years in special education	9.02	1	9.02	15.55 ***
Handicap	2.73	2	1.37	2.36
Cohort	.96	1	.96	1.66
Handicap x Cohort	2.84	2	1.42	2.45
Error	101.55	176	.58	
Total	117.10	182	.64	

*** Significant at .001

B. Unadjusted and adjusted mean number of suspensions by handicapping condition and cohort

	Unadjusted	Adjusted*	(n)
Handicap			
EMI	.63	.66	(46)
EI	.73	.72	(41)
LD	.45	.45	(96)
Cohort			
1978-79	.63	.65	(73)
1979-80	.51	.50	(110)

*Means acjusted for covariate and independents.

TABLE 3.10

A. Analysis of covariance of program completion by handicapping condition and cohort with years in special education

Source	SS	DF	MS	F
Years in special education	5.03	1	5.03	24.78 ***
Handicap	2.01	2	1.01	4.94 *
Cohort	.28	1	.28	1.36
Handicap x Cohort	.75	2	.38	1.85
Error	35.55	175	.20	
Total	43.62	181	.24	

** Significant at .05
*** Significant at .001

B. Unadjusted and adjusted proportion of program completers by handicapping condition and cohort

	Unadjusted	Adjusted*	(n)
Handicap			
EMI	.47	.44	(45)
EI	.54	.55	(41)
LD	.69	.69	(96)
Cohort			
1978-79	.56	.55	(72)
1979-80	.63	.63	(110)

* Means adjusted for covariate and indepencents.

TABLE 3.11

A. Analysis of covariance of number of high school credits by handicapping condition and cohort with years in special education

Source	SS	DF	MS	F
Years in special education	1448.72	1	1448.72	49.12 ***
Handicap	343.42	2	171.71	5.82 **
Cohort	57.78	1	57.58	1.96
Handicap x Cohort	5.65	2	2.83	.10
Error	5102.03	173	29.49	
Total	6957.60	179		

** Significant at .01
*** Significant at .001

B. Unadjusted and adjusted mean number of high school credits by handicapping condition and cohort with years in special education

	Unadjusted	Adjusted*	(n)
Handicap			
EMI	7.25	6.55	(45)
EI	7.05	7.53	(39)
LD	9.56	9.70	(96)
Cohort			
1978-79	9.34	9.15	(71)
1979-80	7.85	7.98	(109)

* Means acjusted for covariate anc independents.

Program termination and infractions of school rules

Special education students in regular school settings are subject to the same rules as their nonhandicapped classmates. Can these rules operate fairly for the handicapped students? For the special education student, the behaviors which are prohibited may be the result of his or her handicapping condition. Therefore, although the rules may be appropriate for maintaining order in the classroom or on school grounds, these guidelines may discriminate against the special education student. Unfortuneately, there are instances in which the disciplinary procedures have been used simply to remove special education students from the regular classroom. Such removal is only allowable when a handicapped student's continued presence is not in his or her best interests or in the best interests of the other students in the classroom. However, when the removal is accomplished to increase the comfort or convenience of the classroom teacher or the regular education students whose instruction is not suffering, the rights of the handicapped student are violated. Secondary special education programs have the responsibility to increase their clients' ability to function in less restrictive environments. In schools, regular education settings are among the least restrictive environments. Therefore, special educators must monitor the disciplinary actions taken against their clients to ensure that the educational opportunities of their clients are being protected.

One indication of the application of discipline policies is the incidence of formal suspension from school. In Pontiac, there are established procedures which must be followed in cases when students are suspended from their classes for periods longer than three days. Building staff have the right to "close classes" for shorter periods of time but if the student is to be denied access to his or her educational program for longer periods, a formal hearing must be held. At this hearing, an impartial school official, one not involved in the matter for which the hearing was convened, hears testimony and makes a finding of fact. The student, or his or her representative, has an opportunity to present evidence and to question the school's witnesses. When a suspension hearing involves a special education student, it is district policy for a representative of the special education department to attend. His or her presence protects the rights of the handicapped student because he or she can provide information to the hearing officer which may attenuate the severity of the charges.

The officer conducting the hearing makes a decision based upon the evidence presented. The penalty is assigned by the building administrator who brought the charge. But, there is an appeal from both the finding of fact and the sentence. Most important, the hearing produces a written record of the proceedings. This record describes the charges against the student

and the penalty imposed if he or she is found guilty of the alleged infraction.

Where available, these records were examined to determine the reasons for which special education stucents were suspended during their high school careers. These records were not able to be obtained for all suspensions because the procedures requiring hearings for suspensions were not in opeartion for the entire four years covered by this research. Evidence of suspensions which occurred prior to the implementation of these hearings was found on the student's permanent record card which is maintained in the high schools. These cards show the semester in which a student has been suspended but do not indicate the reasons for the disciplinary action taken. In these cases, our informant was asked about the circumstances of the infractions in these actions. Her recollections were used to supplement the official records.

Our measure of the impact of school disciplinary procedures on secondary special education students is the number of suspensions which students have received during their high school careers. The number is an indicator of the extent to which a client's educational program has been disrupted. For serious offenses, a student may be suspended for the duration of the semester in which the infraction occurred; he or she receives no credit for the courses during the semester in which a long term suspension is imposed. Therefore, suspensions tend to prolong the time needed to complete the requirements for graduation. By delaying graduation, suspensions make completion of the program less likely in two ways. First, older clients may have more outside-of-school alternatives and may, therefore, feel less need to complete their training. If an opportunity is available now, waiting to finish school may not seem attractive. Second, there are informal age limits for readmission into the regular high school program: if a student is too much older than the classmates in his or her courses, he or she will be denied readmission. Repeated suspensions, then, are indicators of an inability to function adequately in the regular high school setting.

Table 3.12 presents the distribution of the number of suspensions which were imposed upon the secondary special education stucents in this research. Most subjects in this research have never been suspended. At least two-thirds of the educable mentally impaired (68 per cent) and the emotionally impaired (67 per cent) in the 1978-79 cohort and almost three-quarters of the learning disabled students in the following cohort (73 per cent) in the following cohort have not been subject to disciplinary action. About half of the learning disabled (54 per cent) in the earlier cohort and the emotionally mentally impaired (50 per cent) in the later cohort have not been guilty of a serious infraction of the school rules. Only among the emotionally impaired in the 1979-80 cohort are subjects who have

not been suspenced from school a minority (39 per cent). For the majority of secondary special education students, the regular school district discipline procedures seem to have little impact because the handicapped do not violate them. Most secondary students in the regular high school special education programs function adequately enough to avoid suspension.

Those special education students who violate school rules are most likely to be found guilty of a single offense. About a fifth of the subjects in each category of handicap in the 1978-79 ninth grade cohort received only one suspension during their high school careers. Fewer educable mentally impaired (12 per cent) and emotionally impaired (7 per cent) received more than a single suspension in the earlier cohort; about as many learning disabled students in the 1978-79 group (23 per cent) were suspended twc or more times as were suspenced once. Repeated offenders are more common in the 1979-80 cohort. Fully half of the educable mentally impaired (50 per cent) and the emotionally impaired (61 per cent) in the later cchort received two or more suspensions; multiple suspensions were only uncommon among the learning disabled subjects (8 per cent).

The incidence of school suspensions among handicapped students in regular high school buildings does not present a consistent pattern across the two ninth grade cohorts. This inconsistency can be interpreted to mean that the discipline policies are not differentially applied to special education students. Although comparable data are not available for the suspensions of regular education students, it is likely that the suspension rates among the nonhandicapped are similarly low. Moreover, the suspension rates among the categories of disability seem to vary in response tc the individuals in the program at any given time and not by handicapping condition.

The mean number of suspensions of clients in the different handicap groups is another way to examine the pattern of suspension rates. The data in Table 3.13 fail to reveal a consistent pattern among the different handicapping conditions between the twc ninth grade cchorts. In 1978-79, learning disabled students received relatively more suspensions than educable mentally impaired and emotionally impaired students; in 1979-80, learning disabled students on the average received the fewest number of suspensions. We note that students in all categories receive few suspensions and that the differences seen in Table 3.13 are not statistically significant. However, the fact that these data do not show a consistent pattern is important. There is no reason tc believe that the school district's discipline policies are being used to discriminate against handicapped students.

The simple counts of the number of suspensions may mask

differences between subjects with different handicapping conditions. One way in which subjects in the different handicap groups may differ is the stage of their careers at which they are most at risk of suspension. For example, students with more serious handicaps may be at risk earlier in their high school years. The tendency toward earlier suspensions might be reflected in lower completion rates because their educational programs were disrupted before they had time to develop stable ties to the school. Are students in each category of handicap uniformly at risk throughout their high school careers or are they more likely to be suspended at some times than others? Ability to function in regular school settings may vary with the developmental stage of the client. This information could enable program planners to design additional interventions to assist students through the high risk periods. In addition, it can alert program staff to the differential application of discipline procedures across school careers.

The percentages of special education students who were suspended during each semester in high school are displayed in Figure 3.2. (See also Table 3.14.) These displays indicate that the periods of risk for students seem to differ by ninth grade cohort. For all special education students in the 1978-79 cohort, sophomore year represented the period of greatest risk of suspension; the percentage of students suspended seems to decline from the peak reached in the third or fourth semesters. Only the learning disabled students in the 1979-80 cohort show a similar pattern of risk. For the educable mentally impaired and the emotionally impaired in the later cohort, junior year presents higher risks of suspension.

One plausible explanation for the differences in the patterns is that the most disruptive students were removed from the program earlier in the 1978-79 cohort than in the 1979-80 cohort. If this were the case, the continued high risk of students in the 1979-80 ninth grade cohort would indicate that the secondary special education program was more effective with the younger group in maintaining them in school despite their disruptive behavior. However, this explanation is unlikely because higher proportions of the original members of the groups remained in the program at the end of sophomore year in the 1978-79 cohort than in the next year's cohort (88 per cent in 1978-79 and 72 per cent in 1979-80). If disruptive students were more likely to be removed in the earlier cohort, we would expect the opposite pattern, that is, a lower proportion of entrants would remain in the 1978-79 cohort than in the 1979-80 group. This is additional evidence that school discipline policies do not seem to be operating unfairly against handicapped students in the 1979-80 cohort. We have further reason to believe from these data that differences in the patterns displayed reflect differences among the individuals in the two ninth grade cohorts. Therefore, the application of the discipline procedures seems to represent an appropriate response to the behavior of individuals and not a

systematic bias against handicapped students.

Another aspect of the relationship between school discipline policies and program termination is the severity of the infraction of school rules which results in suspension. We might suspect that students guilty of more serious violations of school rules would be more likely to terminate their educational careers before completion than less serious offenders. More serious violations might indicate a greater level of individual disturbance which presents a greater challenge for program interventions. This possibility can be investigated by examining the relationship between program termination and the seriousness of the offense which lead to suspension.

It is possible to categorize the severity of offenses because the **Student Code of Conduct** arranges violations hierarchically. The least serious violations (Classification I) include acts which "disrupt or interfere with the education of other students": throwing food or other objects in the cafeteria, failure to show school identification card or give proper name, failure to obey a reasonable request of a school employee and smoking are examples of general student misconduct. Serious student misconduct (Classification II violations) deal with "acts that are more likely to result in hurting people, damaging property, or causing school disruptions": examples are persistent disregard of instruction or direction, fighting, gambling and larceny. The most serious violations (Classification III) are acts which are illegal: arson, assault and battery, vandalism, extortion and the possession of weapons are examples of illegal misconduct. The penalties which are allowed to be imposed increase in severity with the level of the offense.

Secondary special education students in the two ninth grade cohorts were more likely to be suspended for minor violations of school policies than for major ones: 58 per cent of all suspensions for which reasons could be determined were for problems with attendance. Table 3.15 presents the percentage of suspensions for truancy among the three most recent violations. Of those who have been found guilty of a violation of school rules, the majority had a single suspension and that suspension was for truancy. There is no apparent relationship between the seriousness of the charges against a student and the recency of his or her misconduct. Special education students do not display a pattern of career offenders who begin with minor infractions and move on to more serious violations. However, it is possible that school officials find proving truancy easier than more serious charges. We cannot rule out the possibility that truancy is only one of a series of charges which could be prosecuted. Moreover, because there are relatively few cases of multiple suspensions, it is difficult to determine if earlier suspensions are for less serious violations than later suspensions.

What are the consequences for violating school rules? Are special education students who are guilty of offenses less likely to complete their educational training than those who do not violate school policies? The relatively small numbers of incidents of repeated offense leads us to concentrate on the most recent suspension in attempting to answer these questions.

The most serious consequence which can result from student code violations is termination of the educational program. Table 3.16 shows the termination rates of secondary special education students for levels of severity of offense. Minor offenses are those included in Classification I of the **Student Code of Conduct**; major offenses are Classification II and Classification III violations. These data do not show a simple relationship between termination rate and severity of offense. For example, more serious offenders among the emotionally mentally impaired and the learning disabled in the 1979-80 cohort are less likely to terminate than less serious offenders. However, the number of serious offenders is too small to justify much confidence in the stability of these estimates.

A clearer picture emerges when violators are compared to nonviolators, that is, when the termination rates of those never suspended are compared with those of subjects who have been suspended at least once. We see, then that students who are suspended for any reason are more likely to leave the educational program than those who are not guilty of misbehavior. Only among the educable mentally impaired in the 1978-79 cohort does suspension appear to be unrelated to program termination. In every other group, students who are suspended are at least twice as likely to terminate their educational programs as those who are never suspended.

Before concluding our discussion of disciplinary actions, we will present one additional measure of the disruption caused by suspension from high school. We argued above that suspensions delay completion because students may not accumulate credits in the semesters in which they are suspended. When we examine the number of high school credits earned by students in each ninth grade cohort, we find that students who are suspended do accumulate fewer credits than those who do not violate school rules. (The raw regression coefficient between credits and number of suspensions is -3.97.) An analysis of covariance (see Table 3.17.A) shows that the number of suspensions explains most of the variance in the number of high school credits accumulated by special education students (R**2=.343). When the mean number of credits is adjusted for the influence of the number of suspensions, we note two changes in the pattern displayed. (See Table 3.17.B.)

First, suspensions reduce the differences among students

with different handicapping conditions. The unadjusted means show the learning disabled students accumulating two full credits more on the average than the educable mentally impaired and the emotionally impaired subjects; the adjusted mean for the learning disabled is lower and, after acjustment, the emotionally impaired are shown to have gained slightly more credits than the educable mentally impaired. These differences, however, are not statistically significant.

Second, we expect students who have been in school longer to have accumulated more credits but suspensions significantly increase the difference between students in the two ninth grade cohorts. The difference in the mean number of credits of students in 1978-79 and 1979-80 increase when adjusted for the effects of handicapping condition and number of suspensions. A suspension in the 1979-80 cohort means that the student suspended is even farther behind students in the 1978-79 cohort. These data provide another indication of the disruption in educational programs causec by suspension from school.

In summary, we have shown that the suspension rates of secondary special education students are low and that they do not display a pattern which supports an interpretation of bias against the handicappeo. These is evidence that the discipline policies of the school district respond to the particular behaviors of individual students without regard to their handicapping conditions. In addition, we found a low incidence of repeated violations by secondary special education studerts: most offenders are guilty of a single violation of school rules. But that single violation is costly in terms of their educational training because offenders are much less likely to remain in school than nonoffenders.

TABLE 3.12

Number of suspensions of secondary special education students by handicapping condition and cohort

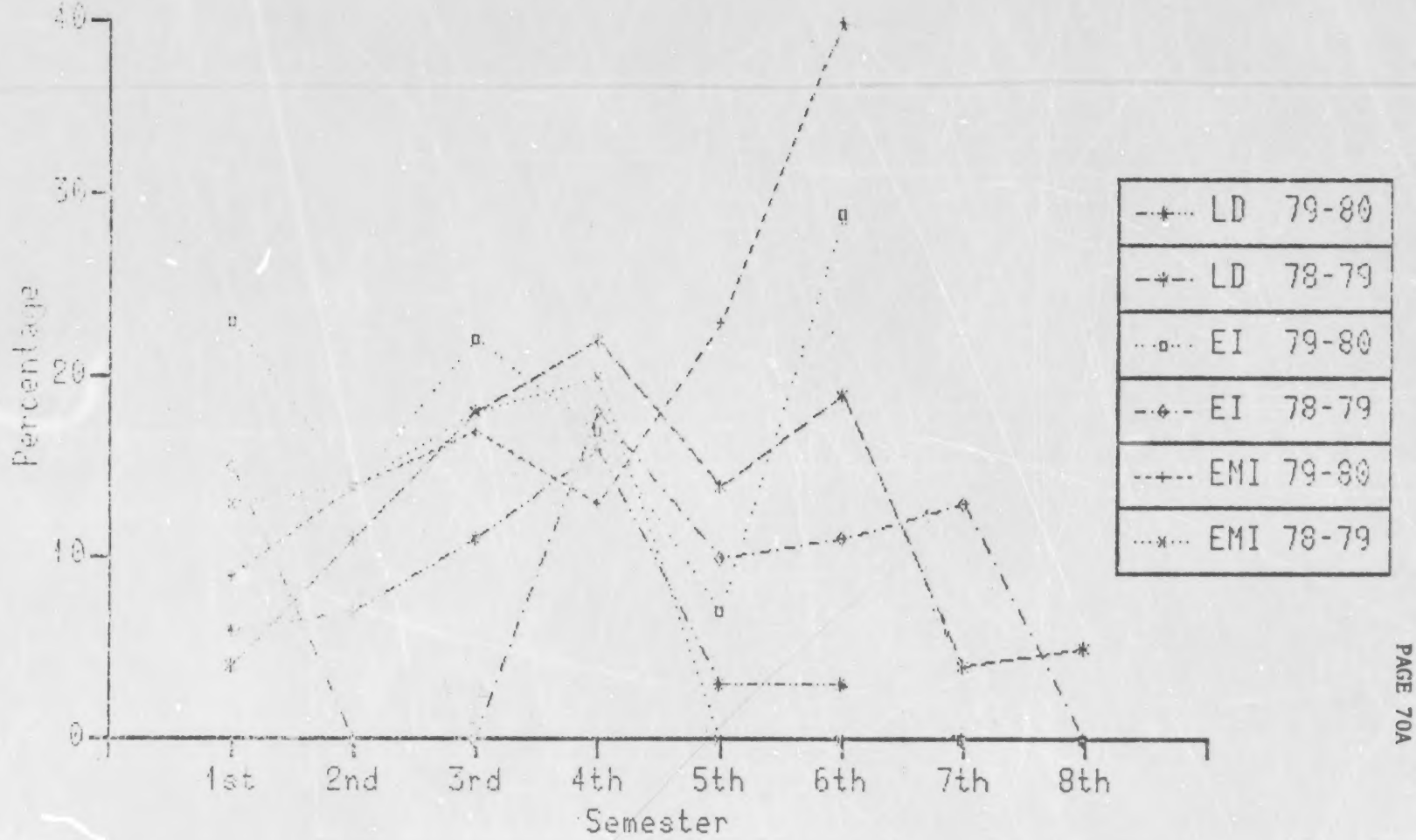
	1978-79			1979-80		
	EMI	EI	LD	EMI	EI	LD
Number						
0	68%	67%	54%	50%	39%	73%
1	20	27	23	33	45	19
2	--	--	17	13	16	6
3	12	6	6	4	--	2
Total	100%	101%	100%	100%	100%	100%
(Number)	(25)	(15)	(48)	(24)	(31)	(63)

TABLE 3.13

Mean number of suspensions of secondary special education students by handicapping condition and cohort

	1978-79			1979-80		
	EMI	EI	LD	EMI	EI	LD
Mean	.58	.44	.78	.71	.77	.36
S.D.	.99	.81	1.01	.86	.72	.68
(Number)	(26)	(16)	(49)	(24)	(31)	(64)

Fig 3.2
Percentage suspended
by semester



PAGE 70A

TABLE 3.14

Percentage of secondary special education students suspended by semester in high school by handicapping condition and cohort

Semester	1978-79 EMI	1978-79 EI	1978-79 LD	1979-80 EMI	1979-80 EI	1979-80 LD
1	13 (23)	15 (13)	4 (46)	9 (22)	23 (29)	6 (61)
2	14 (22)	-- (12)	11 (46)	14 (22)	14 (29)	7 (60)
3	18 (22)	-- (11)	18 (44)	17 (18)	22 (23)	11 (53)
4	20 (20)	18 (11)	22 (41)	13 (15)	17 (18)	16 (48)
5	-- (12)	10 (10)	14 (35)	23 (13)	7 (15)	3 (39)
6	-- (9)	11 (9)	19 (31)	40 (10)	29 (14)	3 (37)
7	-- (8)	13 (8)	4 (23)	--	--	--
8	-- (7)	-- (6)	5 (20)			

TABLE 3.15

Percentage of suspensions for truancy
by handicapping condition and cohort
(Number in parentheses)

	1978-79			1979-80		
	EMI	EI	LD	EMI	EI	LD
Most recent	-- (5)	60 (5)	65 (20	64 (11)	64 (11)	62 (13)
2nd most recent	100 (1)	-- (1)	57 (7)	--	33 (3)	-- (1)
3rd most recent	50 (2)	100 (1)	50 (2)	--	--	--
Total	38 (8)	57 (7)	62 (29)	64 (11)	57 (14)	57 (14)

TABLE 3.16

Percentage who terminate education program by severity of most recent violation by handicapping condition and cohort (Number in parentheses)

	1978-79			1979-80		
	EMI	EI	LD	EMI	EI	LD
None	41 (17)	40 (10)	8 (26)	33 (12)	9 (11)	11 (46)
Minor	50 (4)	67 (3)	62 (13)	100 (7)	57 (7)	63 (8)
Major	--	100 (2)	57 (7)	25 (4)	50 (10)	40 (5)
Total	43 (21)	53 (15)	30 (46)	52 (23)	36 (28)	20 (59)

TABLE 3.17

A. Analysis of covariance of number of high school credits by handicapping condition and cohort with number of suspensions

Source	SS	DF	MS	F	
Suspensions	2304.35	1	2304.35	88.05	***
Handicap	121.07	2	60.53	2.31	
Cohort	219.29	1	219.29	8.38	**
Handicap x Cohort	24.35	2	12.18	.47	
Error	5051.12	193	26.17		
Total	7720.18	199	38.79		

** Significant at .01
*** Significant at .001

B. Unadjusted and adjusted mean number of high school credits by handicapping condition and cohort

	Unadjusted	Adjusted*	(n)
Handicap			
EMI	7.36	7.38	(45)
EI	7.38	8.00	(35)
LD	9.55	9.36	(104)
Cohort			
1978-79	9.45	9.80	(80)
1979-80	7.92	7.66	(110)

* Means adjusted for covariate and independents.

CHAPTER IV

A Model for the Effectiveness of Special Education

Introduction

In the preceding two chapters of this report we have described the characteristics of the secondary special students in this research and we have examined the influence of these characteristics on success in special education programs. In the analyses presented above, we have isolated particular aspects of the program and the subjects' performance in order to address specific questions. In this chapter, we shall apply a technique which allows us to examine the relative effects of a particlar arrangement of all individual and program variables simultaneously. The results of this analysis will enable us to determine if the interrelationships among the variables are the same for subjects in different categories of handicap. In other words, our focus in this chapter will be on the cause of program completion and we shall attempt to discover if the same variables cause program completion for handicapped students.

Evaluation and causal modeling

Special education programs collect a considerable amount of information on their clients as part of their routine operations. The emphasis in this report has been on the more effective use of these data for making program decisions. We have argued that certain data should be collected more systematically and should be more easily accessible to support data based decision making. Those data must also be used in analyses, the results of which can provide decision makers information about program operations. Summaries and counts of client characteristics are not sufficient for this task. In this chapter, we will describe the results of a technique which organizes the available data in ways which allow the decision makers to assess the operation of their programs by concentrating on the interrelationships of program variables.

The technique we propose is causal modeling. To apply this technique, a causal order is postulated for the variables and the causal effects of the variables in the system are computed. This approach is especially useful for the decision maker because it not only specifies the variables which produce program outcomes but also provides estimates of the effects of each variable in the system. It is possible to determine to what extent specific program interventions influence final program outcomes by considering how external factors influence interventions as well as how interventions influence outcomes. A causal model not only describes the relationship between independent variables and the ultimate dependent variable but it also makes explicit the relationships among all prior variables. Therefore, a program director can examine the effects of a variable which is directly under his or her control, taking other external conditions into account. Issues of program accountability can be addressed more appropriately because decision makers can better filter out influences which they can control.

In the following sections of this chapter, we will describe a particular causal model of special education services. We will assume that the reader is familiar with the techniques for estimating the effects in such models and refer him or her to one of the excellent treatments of estimation of causal paths in the literature (for examples, Kenny 1979 or Asher 1976). Our emphasis will be on the interpretation of the results of fitting the model to the data for the secondary special education program in Pontiac.

Description of the model

Program completion. Throughout this report we have argued that the criterion against which secondary special education programs should be measured is the rate of completion of their clients' individual educational programs. We assume that an individual's success in completing his or her educational program will enable him or her to function independently after graduation. If a client of the special education program completes high school, he or she has a better chance to live a normal adult life. Therefore, the model we propose attempts to describe how clients' performance in the special education program and their background characteristics cause program completion. In this section, we shall outline the causal order of the variables assumed in creating the model. We shall present the variables in order of decreasing proximity to the outcome of program completion.

Infractions of school rules. Because schools have the responsibility to maintain an educational environment where learning can take place, students who seriously disrupt their own or other students' educational programs are removed by means of formal suspension from high school. We have seen above that suspensions interrupt a student's career and are related to failure to complete the prescribed training. Our model, therefore, includes number of suspensions as a measure of the ability of secondary special education students to function in regular high schools. We expect to find that disruptive students are less likely to complete their individual educational programs.

Level of program intervention. The major device available to special education practitioners for responding to the identified needs of handicapped students in the regular high school program is the selection of the appropriate educational courses for the individual. Students who are unable to function effectively in regular education classes are scheduled into self contained special education classes where trained professionals can provide more support for their individual learning problems. Special educators can intervene more directly in the educational careers of clients in the special education courses: a student enrolled in more special education courses receives a higher level of direct intervention by program staff.

Our model departs somewhat from our discussion of staff intervention in an earlier chapter of this report. There we suggested that increased levels of intervention may be response to disruptive behavior by a handicapped student. Here we assume that the level of intervention is the result of a diagnostic decision by program staff and that the disruptive behavior, or the absence of it, results from that intervention. In other words, we assume that level of intervention precedes infractions in the causal order. It is possible to test the alternative model that level of

intervention is a response to disruptive behavior. Our analysis below will suggest that this alternative model may be more appropriate for some groups of handicapped youngsters.

Prior special education experience. Logically prior to the level of intervention by practitioners in secondary schools is a client's previous experience in special education programs at the elementary level. If special education services provide a comprehensive program for the handicapped throughout their educational careers, we would expect coordination between elementary and secondary programs. Evidence of such coordination may be the decreased reliance of clients on special education services during their high school years, fewer incidents of disruption and higher rates of completion. We did not collect any specific information about the services provided to clients prior to their entry into the high school program. Our indicator of a subject's career in special education is the total number of years he or she has received special education service. We understand that we lose information by considering only this summary measure. However, there is less variation in elementary programs than in secondary programs and the number of years in special ecucation is an easily computed datum on the clients.

Background characteristics. All the program variables operate within the context of an individual's life situatuion. We cannot assume that all clients with the same handicapping condition present the same problems to special educators. Therefore, it is necessary to add into the model the information about the client's background which may indicate differences in life situations. We shall continue to treat separately students with different handicapping conditions by fitting our model to each group independently. This procedure will enable us to compare the effects of program variables and background characteristics on program completion among the different categories of handicap.

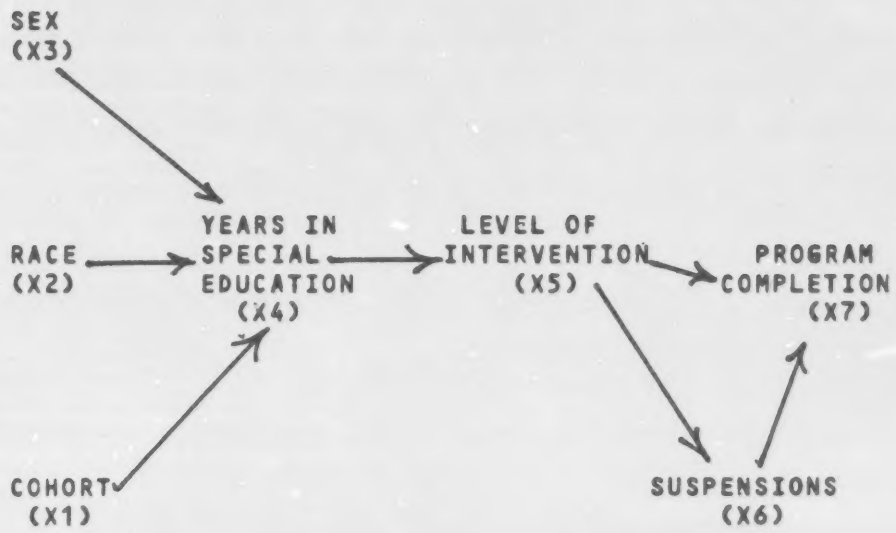
We shall enter three background characteristics directly into the model's equations. First, we shall estimate the effects of the gender of the subject by treating sex as an exogenous variable. Second, we shall attempt to isolate systematic differences among racial groups by considering client's race as part of the model. Third, the ninth grade cohort of which the client is a member will be a component of the model so that we may determine if there are systematic differences between groups of students in the different years. We will not include parent's marital status in the model because of the relatively large number of subjects for whom these data are missing and because of the dated quality of the information, even when it is available.

In summary, we have imposed a causal ordering on the program and background variables collected on secondary special

education students in the 1978-79 and 1979-80 ninth grace cohorts. Our ordering assumes that a student's gender, race and the ninth grade cohort of which he or she is a member directly influences his or her number of years in special ecucation programs. Further, the years in special education programs directly effects the level of interventionin a subject's program during high school which, in turn, effects the level of disruption and program completion. Figure 4.1 displays the model schematically. Although only the major causal paths are drawn in, we will estimate all the direct and indirect effects in the model.

FIGURE 4.1

Causal model for program completion



Description of variables

Program completion. Our measure of program completion is the continuation in less restrictive special education programs for a number of semesters corresponding to the year of entry into high school. Program completion is a dummy variable with a value of "1" for those who are counted as completers and a "0" for those who are not completers. None who have terminated their training for any reason among the completers. Therefore, neither those who have left the program to marry or for employment are considered completers. Moreover, we limit completers to those who remain in less restrictive programs, whether in Pontiac or elsewhere. Subjects who have transferred to residential settings, for example, would not be counted among the completers. Finally, students who entered high school in 1979-80 are considered completers if they remained in an educational program at the end of their junior years; students who entered in 1978-79 can be either still be in school or have been graduated. (The means and standard deviations for all variables used in this analysis appear in Table 4.1; the zero order correlations are presented in Table 4.2. Note that the number of subjects in these tables is reduced because only those for whom information on all variables is available are included.)

Infractions of school rules. Only incidents of major violations of school rules will be counted in our indicator of the student's ability to function in the regular high school. Our indicator is simply the number of times an individual was suspended from high school. We realize that the students may have been guilty of countless other violations of school policy which did not result in his or her suspension but which demonstrated his or her difficulties in school. However, records of minor infractions were not consistently maintained and these data cannot be reliably recaptured. Therefore, we will attempt to determine the effect of major violations on program completion.

Level of program intervention. The average number of self contained special education classes which each student took during his or her high school career is our measure of the level of intervention by special education program staff. A student may have taken as many as five special education courses each semester in a totally self contained program or as few as no self contained classes in any semester. The former case represents maximum intervention; the latter minimum staff involvement in a student's educational program. The number of special education courses the student took each semester were summed and the sum divided by the number of semesters the individual remained in high school.

Prior special education experience. The total number of years during which a student received special education services will be our measure of the student's prior exposure in programs

for the handicapped. Total number of years was computed by subtracting the year in which the student was first certified as eligible for special education services from the year in which he or she left the program or the current year, whichever was later.

Background variables. In order to estimate the effects of the background variables desrcibed above, a series of "dummy" variables were entered into the model's equations. First, the sex of a student was coded "1" for male and "2" for female so that positive values for the coefficients of that variable indicate an effect for being female and negative values indicate an effect for being male. Second, race was coded to indicate the effect of being black by assigning a value of "1" for black students and "0" for all others: positive values for race coefficients will indicate an effect for being black and negative values a non black effect. Finally, students in the 1978-79 ninth grade cohort were coded "1" and those in the 1979-80 ninth grade cohort were coded "0." A positive value for the coefficient for cchort will indicate an effect for being in the later cohort and a negative value an effect for being in the earlier cohort.

TABLE 4.1

Means for variables in causal model
(Standard deviations in parentheses)

Variable	EMI	EI	LD
Program completion (X7)	.48 (.51)	.58 (.50)	.71 (.46)
Number suspension (X6)	.62 (.88)	.72 (.78)	.41 (.71)
Special education courses (X5)	3.66 (.70)	2.52 (1.14)	2.74 (1.08)
Years in program (X4)	7.14 (3.28)	6.61 (2.88)	6.36 (2.80)
Sex (X3)	1.48 (.51)	1.31 (.47)	1.29 (.46)
Race (X2)	.69 (.47)	.53 (.51)	.60 (.49)
Cohort (X1)	1.50 (.51)	1.72 (.45)	1.61 (.49)
Number	42	36	92

TABLE 4.2

Zero order correlations for variables in causal model

A. EMI

	X6	X5	X4	X3	X2	X1
Program completion (X7)	-.18	.06	.40	.05	.02	-.19
Suspensions (X6)		.30	-.43	.14	.06	.11
Special courses (X5)			-.10	-.18	.13	.56
Years in program (X4)				-.23	-.24	-.12
Sex (X3)					.33	.10
Race (X2)						.05

B. EI

	X6	X5	X4	X3	X2	X1
Program completion (X7)	-.38	-.28	.20	.07	.33	.23
Number suspension (X6)		.18	-.34	.08	-.05	.10
Special courses (X5)			.20	-.18	.11	-.05
Years in program (X4)				-.25	.38	-.13
Sex (X3)					-.10	.14
Race (X2)						.03

C. LD

	X6	X5	X4	X3	X2	X1
Program completion (X7)	-.50	.01	.37	.05	.20	.12
Number suspensions (X6)		.15	-.25	.03	.20	-.26
Special courses (X5)			.03	-.04	.11	-.13
Years in program (X4)				.05	.03	-.03
Sex (X3)					-.15	.08
Race (X2)						-.02

A model of special education services

In this section we shall describe the results of fitting the model in Figure 4.1 to the data collected from the two ninth grade cohorts who participated in Pontiac's secondary special education program. We shall present the results in the order specified by the model, that is, we shall move progressively through the model beginning with the background (exogenous) variables and ending with program completion, the final dependent (endogenous) variable. The data which support this discussion are presented in the panels of Table 4.3. Using a technique described by Alwin and Hauser (1975), we decompose total effects into their direct and indirect components. Direct effects are the path coefficients derived in the standard way (Kenny 1979; Asher 1976). Finally, note that the residual paths are provided: they indicate the contribution of all unmeasured variables to the level of the successive dependent variables.

Total years in special education programs. The first variable we shall discuss is total years in special education programs which, in our model, is directly caused by the three exogenous variables in the system. Because of its location in the model, note that there are no indirect effects on the total number of years. Also, the magnitude of the residual paths for the model equations indicate that the exogenous variables explain only a small proportion of the variance in the total number of years in special education programs for learning disabled students (.997) and for the educable mentally impaired (.953); the exogenous variables are slightly more important in explaining the length of time for which the emotionally impaired have received special education services (.893). (See Table 4.3.A.)

Among the educable mentally impaired (-.164) and the emotionally impaired (-.197), males spend more years in special education programs than females; females have a slight advantage among the learning disabled students (.063). The direct effects of race in the model differ among students with different handicapping conditions: non black educable mentally impaired students (-.181) receive special education services for more years whereas black emotionally impaired students (.365) spend more years in special education programs; there is no race effect on tenure in special education for the learning disabled (.043). Among all students, there is a slight tendency in favor of subjects in the 1978-79 cohort to spend more years in special education programs, as is expected.

The results of fitting the first stage of our proposed causal model for the delivery of special education services indicate that the background characteristics of high school students do not seem to determine how long subjects receive special education services. Other factors which are not

associated with these characteristics of individuals operate to cause the students to be certified as special education students. We assume that these other characteristics are those aspects of client behavior which are symptomatic of their handicaps. These aspects of behavior are not caused by a student's sex or race or the year in which he or she began high school. However, we note that the causal force which is present operates differently for students with different handicapping conditions. For example, being black seems to cause a longer tenure in special education programs among the emotionally impaired but a shorter tenure among the educable mentally impaired. We will be alert to these differences in the subsequent stages of the model's development because they indicate the possibility that simple explanations of a variable's effect may be misleading.

Number of special education courses. The second stage of the proposed causal model attempts to predict the average number of self contained special education courses, using student background characteristics and the number of years which he or she has spent in special ecucation programs. We note that there is considerably less contribution by unmeasured variables to our measure of the level of intervention among the ecucable mentally impaired (.771) than among the emotionally impaired (.970) and the learning disabled (.986). Also, at this stage we begin to be able to detect indirect effects for variables in the model. Specifically, we are able to estimate the indirect effects of the background characteristics through the number of years in special education programs. (See Table 4.3.9.)

Among students in all three categories of handicap, males receive higher levels of program intervention. The direct effect of being male is strongest for the educable mentally impaired (-.315), moderate for the emotionally impaired (-.137) and weakest for the learning disabled (-.013). Being black seems to increase the number of self contained special education courses for the educable mentally impaired (.190) and the learning disablec (.103) but to have little direct effect for the emotionally impaired (.047). Being members of the 1979-80 ninth grade cohort has a very strong direct effect on the level of program intervention for the educable mentally impaired (.572), whereas having started high school a year sooner influences the number of self contained classes for the learning disabled (-.127). Cohort membership makes no difference for the emotionally impaired (-.018). Finally, the direct effect of number of years in special education is negative for the educable mentally impaired (-.064), positive for the emotionally impaired (.145) and negligible for the learning disabled (.020). More years in special education reduce the level of program intervention for the ecucable mentally impaired but increase the number of special education courses taken by the emotionally impaired in high school.

Although we may derive estimates of indirect effects for the background characteristics which are mediated through the number of years which a student has received special education services, we find them to be only very slight in our model. However, the pattern of direct effects reveals that the causal relationships among the variables differ among the different categories of handicap. The gender and race of a student exerts more influence among the educable mentally impaired than among students with other handicaps; cohort membership also has a very strong effect for the educable mentally impaired which is opposite the effects for the emotionally impaired and learning disabled students. Only for the emotionally impaired does length of tenure seem to cause higher levels of direct staff involvement in a student's educational program. We see again evidence that the special education programs operate differently for students with different handicaps. These differences become more marked as we proceed through the model.

Suspensions. Our model postulates that suspensions from high school result directly from the level of intervention by program staff into a student's educational program as well as from the influence of all other antecedent variables. Table 4.3.C indicates that the explanatory power of our model is generally higher for infractions of school rules: the direct contribution of all unmeasured variables for the educable mentally impaired is .824, for the emotionally impaired .898 and for the learning disabled .901. Moreover, we encounter more indirect effects at this stage because the influence of prior variables may be mitigated through years in special education or number of special education courses. (We do not separate out these indirect effects in table 4.3 but we will refer to the mediating variable in our discussion below.)

The direct effect of sex on suspensions is strongest for the educable mentally impaired (.190). There is a moderate effect of being female for the learning disabled (.098) but the gender of a student has little to do with increasing the probability of being suspended for the emotionally impaired (.029). Race directly effects suspension from high school differently for students with different handicaps. Among the educable mentally impaired, not being black leads to higher risks of suspension from high school (-.140); for the learning disabled (.203) and the emotionally impaired (.074) being black leads directly to suspensions. Members of the 1978-79 ninth grade cohort who are learning disabled (-.253) and educable mentally impaired (-.178) are suspended more often. The direct effect of longer tenure in special education programs is uniformly to reduce incidence of violation of school rules. But this effect is stronger for the emotionally impaired (-.409) and the educable mentally impaired (-.394) than for the learning disabled (-.269). Enrollment in more self contained special education courses directly produces more suspensions, especially for the educable mentally impaired (.412) and the emotionally impaired (.266).

The indirect effects on number of suspension are in general very small with only two exceptions. First, for the educable mentally impaired the indirect effect for race is as large as the direct effect but opposite in sign (.155 vs. -.140). Therefore, while being white for students with this handicap seems directly to cause suspensions, other variables in the system are suppressing the effect of being black. When we examine the components of the indirect effect which are mediated by the intervening variables in the model, we find that the largest proportion of the indirect effect is mediated by the level of intervention by the program staff (.202). Those black students in whose educational program special educators are more directly involved are suspended more often. This may indicate that staff become more directly involved in the educational programs of blacks who are experiencing difficulties in functioning in the regular high school program. When the level of intervention is taken into account, the apparently greater risks for whites of suspension is reversed. The opposite pattern of race effects is observed among the emotionally impaired where number of years in special education seems to suppress the effect of being white. The direct effect of race for the emotionally impaired (.074) is opposite in sign from the indirect effect through length of tenure in special education programs (-.135).

Second, there is a strong and opposite indirect effect for cohort (.275) among the educable mentally impaired through level of intervention (.236). The magnitude and sign of the direct path from cohort to number of suspensions in the model seems to indicate that those subjects in the 1978-79 ninth grade cohort are suspended more often than those in the 1979-80 group. However, when level of intervention is considered, membership in the 1979-80 cohort leads to more violations of school rules. The higher level of staff intervention in the educational programs of disruptive students in the secondary special education program in the 1979-80 school year suppresses the effect of membership in the later cohort.

The results of the third stage of our proposed causal model provide additional evidence for the differential operation of the secondary special education program. The patterns of direct and indirect effects among students with different handicaps show that student background characteristics influence level of functioning in the regular high school in different ways. Race and year of entry into the high school program are not uniform in their effects among the categories of handicap. Level of intervention by staff and time in special education programs seem to operate to reverse the direct effects of these variables among certain handicapped students. Further investigation of alternative models may reveal that different causal models are appropriate for different categories of handicap. For example, a model which postulates that the number of self contained courses changes in response to demonstrated difficulties in functioning may be more appropriate for the emotionally impaired. However, the

results of testing our current model indicate that the secondary special educaticmn program operates differently for students with different handicaps.

Program completion. The final stage of our proposed causal model involves the explanation of program completion. The magnitude of the residual path coefficients indicate that the model explains a respectable proportion of the variance among the three handicapping categories: the educable mentally impaired (.841), the emotionally impairec (.795), and the learning disabled (.771). At this stage, we again observe instances of the suppression of the direct effects of prior variables by intervening variables.

The strongest direct effect on program completion for sex is observed among the educable mentally impaired (.266); being female has less effect for the learning disabled (.100) and the emotionally impaired (.068). Being black has a strong direct effect omn completion for the emoticnally impaired (.3128) and the learning disabled (.305) but not for the emotionally mentally impaired (.004). The direct effect of cohort on completion is opposite in sign among the emotionally mentally impaired (-.379) and the emotionally impaired (.238): for the former, members of the earlier cohort are more likely to finish their schooling; for the latter, members of the later cohort are more likely to be completers. Length of exposure to special education services has a strong positive direct effect for the educable mentally impaired (.402) and the learning disabled (.222) but only a slight effect for the emotionally impaired (.069). Level of staff intervention has hardly any effect for learning disabled (.056) and opposite effects among the educable mentally impaired (.400) and the emotionally impaired (-.246). Finally, all disruptive students have lower chances of finishing school but the magnitude of the effects differs by category of handicap: the effect for learning disabled is strongest (-.516), for the emoticnally impaired moderate (-.323) and weak among the educanble mentally impaired (-.130).

In general, the indirect effect of the prior variables are small and in the same direction as the direct effects. There are, however, two exceptions. First, the indirect effect of sex for the educable mentally impaired (-.205) is opposite the direct effect (.266). Whereas the direct effect of being female is a greater chance of remaining in the special education program, there is almost an equally strong indirect effect for being male. This indirect effect operates through the number of special education classes the student takes (-.109) and the total years which the student has received special education services (-.071). Educable mentally impaired females have an advantage in completing their schooling because they receive services for more years and because they are enrolled in more special education classes.

Second, the indirect effect of cohort membership for the educable mentally impaired (.182) is opposite in sign to the direct effect (-.379). Most of the indirect effect is mediated through the number of special education classes (.198). Therefore, members of the earlier cohort are more likely to complete their educational programs because there is more direct staff involvement in their educational programs.

Finally, we note that the indirect effect of cohort membership among the learning disabled (.117) is greater than the direct effect (.001), although in the same direction. This indirect effect operates mainly through the number of suspensions (.131). The learning disabled students suspended in the 1979-80 cohort are more likely to remain in school. A similar pattern is revealed in the indirect effect of total years in special education, most of which is mediated through number of suspensions. For the learning disabled in 1979-80, suspensions seem to be an effective device for promoting better school functioning so that more students remain in school.

There is not a consistent pattern of effects on program completion across the three categories of handicap. For the educable mentally impaired, being female, a member of the 1978-79 cohort with more years in special education and taking more self contained special education classes in high school directly increases the chance of completing school. For the emotionally impaired, blacks in 1979-80 with fewer self contained classes and fewer suspensions are more likely to be completers. For learning disabled students, blacks in the special education program for more years who do not violate school rules are more likely to finish. Our investigation of the indirect effects shows that program variables influence outcomes differently for different categories of handicap. An adequate understanding of the effects of the secondary special education program must take handicapping condition into account because of the differences we observed fitting this model.

TABLE 4.3

Direct and indirect effects in causal model

Dependent	Independent	EMI Direct	EMI Indirect	EI Direct	EI Indirect	LD Direct	LD Indirect
A. Years in special education	Sex	-.164	---	-.197	---	.063	---
	Race	-.181	---	.365	---	.043	---
	Cohort	-.092	---	-.113	---	-.037	---
	Residual	(.953)		(.893)		(.997)	
B. Number special courses	Sex	-.315	.010	-.137	-.029	-.013	.001
	Race	.190	.012	.047	.053	.103	.010
	Cohort	.572	.006	-.018	-.017	-.127	-.001
	Years	-.064	---	.145	---	.020	---
	Residual	(.771)		(.970)		(.986)	
C. Suspensions	Sex	.190	-.061	.029	.037	.098	-.018
	Race	-.140	.155	.024	-.123	.203	-.001
	Cohort	-.178	.275	.054	.037	-.253	-.004
	Years	-.394	-.026	-.409	.039	-.269	.002
	Courses	.412	---	.266	---	.106	---
	Residual	(.842)		(.898)		(.901)	
D. Program completion	Sex	.266	-.205	.068	.006	.010	-.028
	Race	.004	.006	.313	.016	.305	.089
	Cohort	-.379	.182	.238	-.028	.001	.117
	Years	.402	.029	.069	.084	.222	.139
	Courses	.400	-.054	-.256	-.086	.056	-.055
	Susps	-.130	---	-.323	---	-.516	---
	Residual	(.841)		(.795)		(.771)	

NOTE: Residual path = (1 - R**2)**.5

Conclusion

In this chapter we have constructed a causal model of the process which leads to program completion by secondary special education students. This model postulates a particular ordering among background and program variables. Our postulated order is only one of several possible arrangements of the variables. Further investigation of the other models is indicated. We suspect that different models may be appropriate for different categories of handicap. Specifically, the patterns of differences between direct and indirect effects seem to indicate that the model describing the process for educable mentally impaired may differ from the model for learning disabled. A model describing program completion seems to require a different causal ordering because increasing the level of staff intervention seems more clearly to be a response to disruptive behavior for emotionally impaired students. No attempt was made to fit alternative models but further work is anticipated.

We have attempted to demonstrate the utility of causal modeling as a technique for the evaluation of the effects of secondary special education. By discovering arrangements of program variables which are appropriate for each handicapping condition, evaluators can provide decision makers with information about the operation of programs for different groups of clients. Differences in patterns of effects can be examined and program modifications made to reduce such differences where necessary. Finally, causal modeling offers a more complete technique for summarizing program data collected by local school districts.

References

Alwin, Duane F. and Robert M. Hauser
1975 "The decomposition of effects in path analysis," American Sociological Review, 40, 1(February), 37-47.

Asher, Herbert B.
1976 Causal Modeling. Beverly Hills, CA: Sage.

Kenny, David A.
1979 Correlation and Causality. New York, NY: John Wiley.

APPENDIX A

DATA CODING SHEET

DATA BASED DECISION-MAKING IN SECONDARY SPECIAL EDUCATION
Pontiac City Schools
Department of Research and Evaluation
Spring 1982

SEQ NUMBER [ ][ ][ ] /1-3 BLDG NUMBER [ ][ ] /4-5

LAST NAME [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ] /6-15

FIRST NAME [ ][ ][ ][ ][ ][ ][ ][ ] /16-23 MI [ ] /24

SEX M [1] F [2] /25 DATE OF BIRTH [ ][ ] mo [ ][ ] da [ ][ ] yr /26-31

ETHNIC AI [1] W [2] H [3] B [4] O [5] /32

SPECIAL ED COURSES 1 2 3 4 5 6 7 8 [ ][ ][ ][ ][ ][ ][ ][ ] /33-40 CREDITS [ ][ ][ ][ ] /41-44

YEAR STARTED 78-79 [1] 79-80 [2] /45

FIRST CERTIFICATION

EMI [1] EI [2] LD [3] OTH [ ] /46 DATE [ ][ ] mo [ ][ ] yr /47-50

LAST CERTIFICATION

EMI [1] EI [2] LD [3] OTH [ ] /51 DATE [ ][ ] mo [ ][ ] yr /52-55

TERMINATION DATE [ ][ ] mo [ ][ ] yr /56-59 DISPOSITION [ ][ ] /60-61

SUSPENSIONS: SEM [ ] /62 REASON [ ] /63

SEM [ ] /64 REASON [ ] /65

SEM [ ] /66 REASON [ ] /67 DBDM/77-80

NOTES:

EJS
7/82

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APPENDIX B

COMPUTER PROGRAMS AND DATA

```
RUN NAME        DATA BASED DECISION-MAKING IN SECONDARY SPECIAL EDUCATION - 1004
FILE NAME       ES
VARIABLE LIST   SEQ,BLDG,NAM1 TO NAM5,SEX,MM,DD,YY,ETH,SEM1 TO SEM8,CRED,
                COU,FCERT,MMFC,YYFC,LCERT,MMLC,YYLC,MMT,YYT,DISP,SUSP1,REAS1,
                SUSP2,REAS2,SUSP3,REAS3,MARST,FAMSIT,SIBS
INPUT MEDIUM    CARD
INPUT FORMAT    FIXED (F3.0,F2.0,2A4,A2,2A4,1X,F1.0,3F2.0,F1.0,8A1,F4.2,F1.0,
                  2(F1.0,2F2.0),2F2.0,1X,9F1.0,F2.0)
N OF CASES      UNKNOWN
COMMENT         ##########################################
                ### RECODE GRADUATION CREDITS TO 17 ###
                ##########################################
RECODE          CRED (17 THRU 20=17)
MISSING VALUES CRED (99.99)
COMMENT         ##########################################################################
                ### ELIMINATE BLANKS IN NUMBER OF COURSES EACH SEMESTER ###
                ##########################################################################
RECODE          SEM1 TO SEM8('0'=0)('1'=1)('2'=2)('3'=3)('4'=4)('5'=5)('6'=6)
                  ('7'=7)('8'=8)(' '=10)(ELSE=9)
COMMENT         ##########################################
                ### RECODE TERMINATION DATE FOR CURRENT ATTENDERS ###
                ##########################################
RECODE          MMT(0=06)
RECODE          YYT(0=83)
COMMENT         ##########################################################
                ### RECODE ETHNIC INTO MINORITY-WHITE VARIABLE ###
                ##########################################################
COMPUTE         ETHWB=ETH
RECODE          ETHWB (1 THRU 3=0)(4=1)(ELSE=9)
MISSING VALUES ETHWB (9)
COMMENT         ##########################################
                ### COMPUTE CHRONOLOGICAL AGE ###
                ##########################################
COMPUTE         YY=YY+1900
COMPUTE         XX=YRMODA(YY,MM,DD)
COMPUTE         ZZ=YRMODA(1982,10,21)
COMPUTE         AGE=(ZZ-XX)/365.0
DO REPEAT       XV1=SEM1 TO SEM8/XV2=S1 TO S8/
IF              ((XV1 LE 5) OR (XV1 EQ 7)) XV2=1
IF              ((XV1 EQ 6) OR (XV1 GE 8)) XV2=0
END REPEAT
COMMENT         ##########################################################
                ### RECODE LCERT TO FCERT IF LCERT MISSING ###
                ##########################################################
IF              ((LCERT EQ 7) OR (LCERT EQ 9)) LCERTR=FCERT
IF              ((LCERT GE 1) AND (LCERT LE 4)) LCERTR=LCERT
IF              (LCERTR EQ 0) LCERTR=9
ASSIGN MISSING LCERTR(9)
COMMENT         ##########################################################
                ### DUMMY VARIABLES OF LCERTR FOR DISCRIMINANT###
                ##########################################################
COMPUTE         LC1=0
COMPUTE         LC2=0
COMPUTE         LC3=0
IF              (LCERTR EQ 1) LC1=1
IF              (LCERTR EQ 2) LC2=1
IF              (LCERTR EQ 3) LC3=1
COMMENT         ##############################################################
                ### COMPUTE NUMBER OF SEMESTERS IN REGULAR ATTENDANCE ###
                ##############################################################
COUNT           TIMEIN=S1 TO S8(1)
                ##########################################
COMMENT         ### COMPUTE LEAVER-STAYER VARIABLE ###
                ##########################################
COMPUTE         STAYER=TIMEIN
RECODE          STAYER(1 THRU 5=0)(6 THRU 8=1)(ELSE=9)
ASSIGN MISSING STAYER(9)
```


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```
COMMENT         ##########################################
                ### COMPUTE NUMBER OF SUSPENSIONS ###
                ##########################################
COUNT           NSUSP=SUSP1 TO SUSP8 (8)
COMMENT         ##########################################################
                ### COMPUTE NUMBER OF YEARS IN SPECIAL EDUCATION ###
                ##########################################################
COMPUTE         INPROG=YY1-YY1C
COMMENT         ##########################################################################
                ### COMPUTE MEAN NUMBER OF SPECIAL ED COURSES EACH SEMESTER ###
                ##########################################################################
DO REPEAT       XV3=SEM1 TO SEM8/XV4=SESEM1 TO SESEM8/
COMPUTE         XV4=XV3
END REPEAT
RECODE          SESEM1 TO SESEM8(6 THRU 9=9)
ASSIGN MISSING  SESEM1 TO SESEM8(9)
COMPUTE         AVG=0
DO REPEAT       XV5=SESEM1 TO SESEM8/
IF              (XV5 LE 5) AVG=AVG+XV5
END REPEAT
COMPUTE         SEAVG=AVG/TIMEIN
ASSIGN MISSING  TIMEIN(0)
ASSIGN MISSING  SEAVG(99)
COMMENT         ##########################################
                ### COMPUTE SUMMARY DISPOSITION VARIABLES ###
                ##########################################
COMPUTE         COMP=DISP
RECODE          COMP(1,2,3=2)(4,5,6=1)(7=0)(ELSE=9)
COMPUTE         COMP01=DISP
RECODE          COMP01(1,2,3=1)(4,5,6,7=0)(ELSE=9)
COMMENT         ##########################################
                ### COMPUTE LEVEL OF SEVERITY OF OFFENSES ###
                ##########################################
DO REPEAT       XV6=REAS1,REAS2,REAS3/XV7=LEV1 TO LEV3/
COMPUTE         XV7=XV6
END REPEAT
RECODE          LEV1 TO LEV3(1,2=1)(3,4=2)(5,6=3)(ELSE=9)
IF              (NSUSP EQ 0) LEV1=0
COMMENT         ##########################################
                ### COMPUTE INTACT FAMILIY STATUS ###
                ##########################################
COMPUTE         INTACT=MARST
RECODE          INTACT (1,6=1)(2 THRU 5=0)(ELSE=9)
MISSING VALUES  INTACT (9)
COMMENT         ##########################
                ### COMPUTE BLDG01 ###
                ##########################
COMPUTE         BLDG01=BLDG-70
COMMENT         ##########################################
                ### COMPUTE AGE AT TERMINATION ###
                ##########################################
COMPUTE         AGE1=YY1-(YY-1900)
ASSIGN MISSING  AGE1 (99)
VAR LABELS      SEQ,STUDENT SEQUENCE NUMBER/
                BLDG,BUILDING NUMBER/
                SEX,SEX/
                MM,BIRTH MONTH/
                DD,BIRTH DAY/
                YY,BIRTH YEAR/
                AGE,AGE IN YEARS/
                ETH,ETHNIC GROUP/
                SEM1,SPECIAL ED COURSES SEMESTER 1/
                SEM2,SPECIAL ED COURSES SEMESTER 2/
                SEM3,SPECIAL ED COURSES SEMESTER 3/
                SEM4,SPECIAL ED COURSES SEMESTER 4/
                SEM5,SPECIAL ED COURSES SEMESTER 5/
                SEM6,SPECIAL ED COURSES SEMESTER 6/
```


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```
                SEM7,SPECIAL ED COURSES SEMESTER 7/
                SEM8,SPECIAL ED COURSES SEMESTER 8/
                CRED,NUMBER OF CREDITS/
                COH,COHORT/
                FCERT,FIRST CERTIFICATION/
                MMFC,MONTH FIRST CERTIFIED/
                YYFC,YEAR FIRST CERTIFIED/
                LCERT,LAST CERTIFICATION/
                AGET,AGE AT TERMINATION/
                INTACT,STATUS OF FAMILY/
                LCERTR,RECODED LAST CERTIFICATION/
                MMLC,MONTH LAST CERTIFIED/
                YYLC,YEAR LAST CERTIFIED/
                MMT,MONTH TERMINATED/
                YYT,YEAR TERMINATED/
                DISP,DISPOSITION/
                SUSP1,SEMESTER OF MOST RECENT SUSPENSION/
                REAS1,REASON FOR MOST RECENT SUSPENSION/
                SUSP2,SEMESTER OF 2ND MOST RECENT SUSPENSION/
                REAS2,REASON FOR 2ND MOST RECENT SUSPENSION/
                SUSP3,SEMESTER OF 3RD MOST RECENT SUSPENSION/
                REAS3,REASON FOR 3RD MOST RECENT SUSPENSION/
                MARST,NATURAL PARENT MARITAL STATUS/
                FAMSIT,FAMILY SITUATION/
                SIBS,NUMBER OF SIBLINGS/
                NSUSP,NUMBER OF SUSPENSIONS/
                INPROG,YEARS IN SPECIAL ED
VALUE LABELS    BLDG(70)PGHS(71)PNHS/
                LCERTR(1)EMI(2)[illegible]ED(4)POHI/
                LEV1 TO LEV3(0)NONE(1)TRUANT(2)MINOR(3)MAJOR/
                SEX(1)MALE(2)FEMALE/
                ETHN(1)AMERIND(2)WHITE(3)HISPANIC(4)BLACK(5)OTHER/
                SEM1 TO SEM8(0)ZERO(1)ONE(2)TWO(3)THREE(4)FOUR(5)FIVE(6)NOT IN
                   (7)MODIFIED(8)SUSPEND(10)NA/
                COH(1)78-79(2)79-80/
                FCERT,LCERT(1)EMI(2)EI(3)LD(4)POHI(7)DECERT/
                DISP(1)ATTEND(2)GRAD(3)XFER-ED(4)XFER-RES(5)EMPLOYED(6)MAR-PREG
                   (7)TERMINAT/
                REAS1,REAS2,REAS3(1)TRUANT(2)RULES(3)INSUBORD(4)FIGHTING
                   (5)ASSAULT(6)DRUG-ALC(0)NA/
                MARST(1)MARRIED(2)SEPAR(3)DIVORCE(4)DEAD(5)SINGLE(6)FOSTER/
                FAMSIT(1)2 ADULTS(2)1 ADULT(3)OTHER
MISSING VALUES  REAS1,REAS2,REAS3,MARST,FAMSIT(9)
MISSING VALUES  SEM1 TO SEM8(9,10)
MISSING VALUES  DISP,SEX,ETH,COH,FCERT(0,9)
MISSING VALUES  LCERT(0,9)
MISSING VALUES  SUSP1 TO REAS3(0,9,10)
MISSING VALUES  SIBS,MMT,YYT(99)
MISSING VALUES  MMFC,YYFC,MMLC,YYLC(0,99)
ASSIGN MISSING  SEMM1 TO SEMM8,COMP,COMP01,LEV1 TO LEV3(9)
ASSIGN MISSING  INPROG(999)
PRINT FORMATS   NAM1 TO NAM5(A)/CRED,SEAVG(2)/AGE(1)
SELECT IF       (LCERTR EQ 1)
TASK NAME       NEW AND REVISED PATH MODEL FOR EMI
REGRESSION      VARIABLES COMP01,NSUSP,SEAVG,INPROG,SEX,ETHWB,COH/
                REGRESSION INPROG WITH SEX TO COH (2)/
                REGRESSION SEAVG WITH SEX TO COH (2)/
                REGRESSION SEAVG WITH INPROG TO COH (2)/
                REGRESSION NSUSP WITH SEX TO COH (2)/
                REGRESSION=NSUSP WITH INPROG TO COH (2)/
                REGRESSION=NSUSP WITH SEAVG TO COH (2)/
                REGRESSION=COMP01 WITH SEX TO COH (2)/
                REGRESSION=COMP01 WITH INPROG TO COH (2)/
                REGRESSION=COMP01 WITH SEAVG TO COH (2)/
                REGRESSION=COMP01 WITH NSUSP TO COH (2)/
STATISTICS      1,2
READ INPUT DATA
```


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00170XXXXXXXXXXXXXXXXXX2091663423848	01501104781	0380074422113911	
00270XXXXXXXXXXXXXXXXX1041663425422	01501201751068	01	9
00370XXXXXXXXXXXXXXXXX1121263411000000180011057130681068202			3
00470XXXXXXXXXXXXXXXXXX1121863423845888	1000130373304799999077169599999		
00570XXXXXXXXXXXXXXXXXX2112463423238	0850110478331280999907513906		
00670XXXXXXXXXXXXXXXXX2123463241215	02501301741057610800799999		
00770XXXXXXXXXXXXXXXXXX2121063432544122187511117630481068202	3903		
00870XXXXXXXXXXXXXXXXXX2111863423889	00501111771	0980934939195904	
00970XXXXXXXXXXXXXXXXXX1092863423777478	05501304753	06810761	1903
01070XXXXXXXXXXXXXXXXXX1031363423868	01001112721	0380 4439156299	
01170XXXXXXXXXXXXXXXXXX2082263423444448	07501210732	10810771	3204
01270XXXXXXXXXXXXXXXXXX1031563423553318001105743097906820299999			
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23571XXXXXXXXXXXXXXXXXXXX1101263 3344      0650111072 1     038107      4901
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25671XXXXXXXXXXXXXXXXXXXX2070563 222200    15002999992          01      9999
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27471XXXXXXXXXXXXXXXXXXXX2052163 44 48     04002104712 1180028 10743    1111
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27771XXXXXXXXXXXXXXXXXXXX1062463 232       2201782     108107           3104
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28671XXXXXXXXXXXXXXXXXXXX1040763 610100    14752999993          01      9999
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31070XXXXXXXXXXXXXXXXXX1030763491      00001210752     107804      3904
END INPUT DATA
*SELECT IF      (LCERTR EQ 2)
TASK NAME       NEW AND REVISED PATH MODEL FOR E1
REGRESSION      VARIABLES=COMPO1,NSUSP,SEAVG,INPROG,SEX,ETHWB,COH/
                REGRESSION=INPROG WITH SEX TO COH (2)/
                REGRESSION=SEAVG WITH SEX TO COH (2)/
                REGRESSION=SEAVG WITH INPROG TO COH (2)/
                REGRESSION=NSUSP WITH SEX TO COH (2)/
                REGRESSION=NSUSP WITH INPROG TO COH (2)/
                REGRESSION=NSUSP WITH SEAVG TO COH (2)/
                REGRESSION=COMPO1 WITH SEX TO COH (2)/
                REGRESSION=COMPO1 WITH INPROG TO COH (2)/
                REGRESSION=COMPO1 WITH SEAVG TO COH (2)/
                REGRESSION=COMPO1 WITH NSUSP TO COH (2)/
STATISTICS      1,2
*SELECT IF      (LCERTR EQ 3)
TASK NAME       NEW AND REVISED PATH MODEL FOR E2
REGRESSION      VARIABLES=COMPO1,NSUSP,SEAVG,INPROG,SEX,ETHWB,COH/
                REGRESSION=INPROG WITH SEX TO COH (2)/
                REGRESSION=SEAVG WITH SEX TO COH (2)/
                REGRESSION=SEAVG WITH INPROG TO COH (2)/
                REGRESSION=NSUSP WITH SEX TO COH (2)/
                REGRESSION=NSUSP WITH INPROG TO COH (2)/
                REGRESSION=NSUSP WITH SEAVG TO COH (2)/
                REGRESSION=COMPO1 WITH SEX TO COH (2)/
                REGRESSION=COMPO1 WITH INPROG TO COH (2)/
                REGRESSION=COMPO1 WITH SEAVG TO COH (2)/
                REGRESSION=COMPO1 WITH NSUSP TO COH (2)/
STATISTICS      1,2
TASK NAME       BREAKDOWN FOR STAYER VARIABLE
BREAKDOWN       TABLES=SESEMI TO SESEM5,NSUSP BY STAYER BY COH BY LCERTR
TASK NAME       MEDIAN RUN FOR INPROG
FREQUENCIES     GENERAL=INPROG
STATISTICS      ALL
TASK NAME       ANOVA FOR PROGRAM VARIABLES
ANOVA           SEAVG BY LCERTR(1,3) COH(1,2) WITH INPROG
STATISTICS      ALL
ANOVA           INPROG BY LCERTR(1,3) COH(1,2)
STATISTICS      ALL
ANOVA           NSUSP BY LCERTR(1,3) COH(1,2)
STATISTICS      ALL
ANOVA           SEAVG BY LCERTR(1,3) COH(1,2)
STATISTICS      ALL
ANOVA           TIMEIN BY LCERTR(1,3) COH(1,2)
STATISTICS      ALL
ANOVA           COMPO1 BY LCERTR(1,3) COH(1,2) WITH SEAVG
STATISTICS      ALL
ANOVA           COMPO1 BY LCERTR(1,3) COH(1,2) WITH NSUSP
```


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```
STATISTICS    ALL
ANOVA         COMPO1 BY LCERTR(1,3) COH(1,2) WITH INPROG
STATISTICS    ALL
ANOVA         COMPO1 BY LCERTR(1,3) COH(1,2) WITH TIMEIN
STATISTICS    ALL
TASK NAME     INTERMINABLE BUNCHES OF PEARSON CORRELATIONS
*SELECT IF    ((COH EQ 1) AND (LCERTR EQ 1))
PEARSON CORR  CRED,COMPO1,NSUSP,SEAVG,INPROG,TIMEIN
STATISTICS    ALL
*SELECT IF    ((COH EQ 1) AND (LCERTR EQ 2 )
PEARSON CORR  CRED,COMPO1,NSUSP,SEAVG,INPROG,TIMEIN
STATISTICS    ALL
*SELECT IF    ((COH EQ 1) AND (LCERTR EQ 3))
PEARSON CORR  CRED,COMPO1,NSUSP,SEAVG,INPROG,TIMEIN
STATISTICS    ALL
*SELECT IF    ((COH EQ 2) AND (LCERTR EQ 1))
PEARSON CORR  CRED,COMPO1,NSUSP,SEAVG,INPROG,TIMEIN
STATISTICS    ALL
*SELECT IF    ((COH EQ 2) AND (LCERTR EQ 2))
PEARSON CORR  CRED,COMPO1,NSUSP,SEAVG,INPROG,TIMEIN
STATISTICS    ALL
*SELECT IF    ((COH EQ 2) AND (LCERTR EQ 3))
PEARSON CORR  CRED,COMPO1,NSUSP,SEAVG,INPROG,TIMEIN
STATISTICS    ALL
TASK NAME     DISTRIBTION OF NUMBER OF SUSPENSIONS
CROSSTABS     TABLES=NSUSP BY LCERTR BY COH
OPTIONS       3,5
TASK NAME     CHECK SPECIAL EDUCATION COURSES FOR STAYERS
*SELECT IF    (TIMEIN GE 5)
CROSSTABS     TABLES=SESEM1 TO SESEM8,NSUSP BY LCERTR BY COH
OPTIONS       3,5
TASK NAME     CHECK SPECIAL EDUCATION COURSES FOR LEAVERS
*SELECT IF    (TIMEIN LE 5)
CROSSTABS     TABLES=SESEM1 TO SESEM8,NSUSP BY LCERTR BY COH
OPTIONS       3,5
TASK NAME     BREAKDOWNS
BREAKDOWN     TABLES=SESEM1 TO SESEM8 BY LCERTR BY COH
TASK NAME     PATH ANALYSIS (EMI)
*SELECT IF    (LCERTR EQ 1)
REGRESSION    VARIABLES=COMPO1,CRED,AGET,LEV1,SEAVG,INPROG,COH,ETHWB,SEX/
              REGRESSION=COMPO1 WITH AGET TO SEX(2)/
              REGRESSION=CRED WITH AGET TO SEX(2)/
              REGRESSION=AGET WITH LEV1 TO SEX(2)/
              REGRESSION=SEAVG WITH INPROG TO SEX(2)/
              REGRESSION=LEV1 WITH INPROG TO SEX(2)/
              REGRESSION=INPROG WITH COH TO SEX(2)/
STATISTICS    1,2
TASK NAME     PATH ANALYSIS (EI)
*SELECT IF    (LCERTR EQ 2 )
REGRESSION    VARIABLES=COMPO1,CRED,AGET,LEV1,SEAVG,INPROG,COH,ETHWB,SEX/
              REGRESSION=COMPO1 WITH AGET TO SEX(2)/
              REGRESSION=CRED WITH AGET TO SEX(2)/
              REGRESSION=AGET WITH LEV1 TO SEX(2)/
              REGRESSION=SEAVG WITH INPROG TO SEX(2)/
              REGRESSION=LEV1 WITH INPROG TO SEX(2)/
              REGRESSION=INPROG WITH COH TO SEX(2)/
STATISTICS    1,2
TASK NAME     PATH ANALYSIS (LD)
*SELECT IF    (LCERTR EQ 3)
REGRESSION    VARIABLES=COMPO1,CRED,AGET,LEV1,SEAVG,INPROG,COH,ETHWB,SEX/
              REGRESSION=COMPO1 WITH AGET TO SEX(2)/
              REGRESSION=CRED WITH AGET TO SEX(2)/
              REGRESSION=AGET WITH LEV1 TO SEX(2)/
              REGRESSION=SEAVG WITH INPROG TO SEX(2)/
              REGRESSION=LEV1 WITH INPROG TO SEX(2)/
              REGRESSION=INPROG WITH COH TO SEX(2)/
STATISTICS    1,2
```


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```
TASK NAME      BREAKDOWN FOR 1978-79 COHORT
*SELECT IF     (COH EQ 1)
BREAKDOWN      TABLES=CRED,AGE,TIMEIN,LEV1,INPROG,SEAVG,AGET BY LCE  ,LCERT
TASK NAME      BREAKDOWN FOR 1979-80 COHORT
*SELECT IF     (COH EQ 2)
BREAKDOWN      TABLES=CRED,AGE,TIMEIN,LEV1,INPROG,SEAVG,AGET BY LCERTR,LCERT
TASK NAME      DISCRIMINANT ANALYSIS FOR COMP
DISCRIMINANT   GROUPS=COMP(0,2)/
               VARIABLES=CRED,INPROG,LEV1,TIMEIN,AGET,INTACT,SIBS,LC1 TO LC3/
               ANALYSIS=CRED,INPROG,LEV1,TIMEIN,AGET,INTACT,SIBS,LC1 TO LC3/
               PRIORS=SIZE/
OPTIONS        5,6,8
STATISTICS     6
TASK NAME      CROSSTABS FOR 1978-79 COHORT
*SELECT IF     (COH EQ 1)
CROSSTABS      TABLES=ETH,SEM1 TO SEM8,FCERT,DISP,SUSP1 TO FAMSIT,COMP
                     BY LCERT,LCERTR
TASK NAME      CROSSTABS FOR 1979-80 COHORT
*SELECT IF     (COH EQ 2)
CROSSTABS      TABLES=ETH,SEM1 TO SEM8,FCERT,DISP,SUSP1 TO FAMSIT,COMP
                     BY LCERT,LCERTR
OPTIONS        1,3,5
CROSSTABS      TABLES=REAS1 REAS2 REAS3 LEV1 LEV2 LEV3 BY LCERTR BY COH/
                     COMP BY LEV1 TO LEV3 BY LCERTR BY COH
OPTIONS        3,5
TASK NAME      CROSSTABULATIONS
CROSSTABS      TABLES=SEX,TIMEIN BY LCERTR BY COH/
                     DISP BY TIMEIN BY LCERTR BY COH
OPTIONS        3,5
FINISH
```


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